The Builder.

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Exhibition of Designs for the Sheffield Municipal Buildings.

ONLY eighty-three, or less than half the number, of the unsuccessful competitors in the preliminary competition for the erection of municipal buildings for Sheffield have thought it worth their while to allow their designs to be exhibited for the edification, or mystification, of the public of Sheffield, and for the delectation of such of their professional brethren as may take sufficient interest in the matter to go and see them. Of these eighty-three, nine are anonymous. For the absence of the rest the critic, whose business it is to study the eighty-three, must be grateful; but since the six successful designs are also absent, it must be confessed that the exhibition is shorn of an appreciable amount of interest.

It is probable, however, that the designs shown, taken all round and one with another, fairly represent the whole. The particulars placed before competitors were so complete and detailed that the general similarity existing among a large number of the designs is no ground for surprise, though in some particulars many of them are practically identical. One may fairly assume that exceptional treatment is not much more frequent among the absent drawings than it is among those that are present, and, though it might be of great interest to competitors to see those few exceptions, yet what is already hung is quite as much as or more than most other people can possibly digest.

To speak first of the points of similarity. Though a few competitors appear to have made the Surrey-street front as important in other respects as that to Pinstone-street, yet not one has ventured to disregard the suggestion that the principal entrance should be in Pinstone-street, and it has been made the central feature of the façade by all but a bare half-dozen. Sixty-three, out of eighty-three, have placed the three reception-rooms *en suite* along the Pinstone-street frontage, and in most of the other cases they come up to one of its corners. Thirty-eight sets of plans are laid out with a continuous internal corridor parallel to all the four sides of the site. No fewer than thirty-seven have placed the Council-chamber behind the Pinstone-street frontage, facing a court-yard, and separated from the reception-rooms by the grand staircase or by a corridor only. Only one or two have found it possible to do without a mezzanine, or a second lower ground-floor, or a basement the greater part of which is treated as ground-floor. In the great majority of instances the two ground-floors are frankly accepted, and called the upper and the lower. Of the elevations only five could possibly be styled Gothic, and by far the larger number are more or less purely Classic Renaissance designs of one or other period or country. Several gentlemen have borrowed from Messrs. Webb and Bell's Birmingham Assize Courts, others from Mr. Collcutt's Imperial Institute, and one firm have taken Mr. Waterhouse's tower of the National Liberal Club, and stuck it bodily on the corner of their building.

Great difference of opinion seems to have prevailed as to the proper position for the various suites of offices; where a whole department has been relegated to the lower ground-floor, the Health Department has generally been the one chosen, but most competitors have preferred to so treat a few of the less important offices of each suite. The favourite positions for the important Borough Accountant's general office are in the middle of the site beneath the Council-chamber and to the right of the entrance, under the reception-rooms; but it is placed by one architect or another in almost every possible position. The large public lavatories, too, which were required by the conditions, seem to have found no obviously right place, on the whole. The corner of Pinstone and Surrey streets, for men, and the opposite corner, beside the churchyard, for women, of course on the lowest floor,—whether called a ground-floor or a basement,—have been most frequently chosen; the entrances being by staircases either in the areas or within the building, but with external doors to the street. The drawing office of the Water Department, which had to be on the first-floor, seems to have fared badly in many cases, and not infrequently has had to put up with south light.

A large number of competitors have paid no attention to the suggestion that part of the site should be left for future extension, having apparently come to the conclusion that this can hardly be done without spoiling the building now, or spoiling it when complete. Taking into consideration the awkward shape of the ground, it appears that the accommodation required to be placed on it is as much as it will hold without adding another story to the building. Those who have left part of the site unbuilt upon have done so in one of three ways. Either they have cut their building short, and left a space at the Norfolk-street end; or they have left a corner or section of their building incomplete on the churchyard side; or they have a large internal courtyard, and have suggested the future erection of a connecting corridor and offices across it. In the first two cases the present plans are invariably spoilt, and in the latter the result of carrying out the suggestion would be disastrous to the light and ventilation of the future building.

Taking the designs in the order in which they are hung, the first that calls for mention is No. 12, by Mr. R. A. Briggs. The plan is laid out with a corridor parallel to the four frontages; but a part of the building facing the church is left for completion in the future, so that, for the present, the corridor is not continuous. On the Pinstone-street side it is double, with a grand staircase and two light areas between. The Accountant's general office is opposite a central entrance, and his other rooms to the right; the Water and Surveyor's departments occupying the rest of the ground-floor. The Health Department is on the lower floor, with the public lavatories occupying the two front corners of the building. On the first-floor the reception rooms are on the principal front, while beyond the grand staircase, and equally well served by it, is the Council-chamber, overlooking the courtyard, and approached through the ante-room, which has the cloak-rooms on each side of it. All this part of the arrangement is excellent. The elevation is, perhaps, too tame, but it is appropriate, in good taste, and beautifully drawn.

No. 34, by Mr. W. Henman, of Birmingham, is a plan very similar in general arrangement to the last. A larger part of the building is left to be added, and this part includes half the frontage to Norfolk-street. The Council-chamber is not approached from the principal stairs direct, but is placed further in the rear and reached through its ante-room from the corridor which gives access to the committee-rooms. These committee-rooms are all *en suite* on the churchyard front; which, one may remark, is evidently their right place, for it is sunny and comparatively quiet. It is a happy arrangement which thus connects the Council-chamber with the committee-rooms

directly and somewhat more distantly with the reception-rooms. In this design, as in No. 12, the Surveyor's department occupies, as is right, the most important corner of the ground-floor. The Health Department is to the right of the entrance, the Accountant's offices in the middle, and the Water Department in the rear. The elevation shows an unnecessarily lofty and heavy tower at the principal corner. It owes something to the Birmingham Courts, but is, on the whole, not unpleasing.

An anonymous set of drawings, numbered 48, deserve notice on account of the excellence of the elevation, which, though composed of commonplace elements, is well designed and scholarly; and also for the general convenience of the plan, which is laid out round two corridors parallel to Surrey-street. The Accountant's office is especially well placed, and has two public doors easily accessible from the entrances in Pinstone and Surrey streets respectively.

No. 49, by Messrs. Morris & Hunter, is another good design. As regards the elevation, the extreme severity of its long range of columns and windows may be right or wrong: most people would think it carried too far; but at least the work is that of a man of culture who knows more than most people of the art of architectural design. The plans are spoilt by leaving a ridiculous little corner on two of them for "future extension." The main corridors are chiefly parallel to the frontages, but that on the south side is bent in and joins the front corridor at a right angle, leaving a corner in which the Council-chamber, with the Rates Office beneath it, is placed. This contrivance looks a little awkward in the drawings, but would probably work very well in reality; especially as the Council-chamber is thus made a sort of connecting-link between the reception and committee rooms, and the whole could be made to form, on occasion, a very fine suite indeed.

No. 54, by Mr. R. Stark Wilkinson, bears unmistakable and regrettable marks of hurry. The setting-out of the plan is remarkable; the Surrey-street and Cheney-row frontages have been produced until they met, and the angle has then been bisected by a line which becomes the axis of the building; the general lines of the Pinstone and Norfolk street frontages have been taken at right-angles to it, and thus the general form of the plan has been reduced to a trapezium. It is the only way in which a symmetrical building of the size required could be placed on the site, and it is, architecturally, as satisfactory as it is ingenious. Of course a large corner of ground is thus wasted at the corner of Pinstone-street and Cheney-row, but by rounding the corners of the building, and projecting the middle of it, the waste has been greatly reduced; besides, as Mr. Wilkinson points out, it opens up a view of the old church from the obelisk, which is a matter not to be altogether overlooked. The rounded corners have the further use of hiding the sharpness of the angles. In detail the plans are fairly good, but so nearly like some of those already remarked on that they need not be described in detail. The elevation is well balanced, but too much broken up. Messrs. Farrow & Nisbett, 64, exhibit a prettily-drawn elevation, and a plan in which the reception-rooms are shown side by side instead of end to end, as is done in all other cases.

The clever elevation of No. 73—anonymous—is too good for the plans which accompany it, and which have evidently been spoilt by the supposed necessity for laying out the corridors at right angles, and for leaving a piece of ground at the end for extension. The elevation strikes one as being born before its day, and as belonging rather to the architecture of the future. It would be better still but for the heavy tower over the entrance, which most people would not admire until it became half-ruinous.

No. 83, by Mr. John Johnson, is a plan in which the main corridor runs round the three principal sides of the site only; the reception rooms are on the main front, and approached by the grand staircase, which, again, gives access to the Council-chamber just behind it, as previously described. This plan is the best of its kind exhibited. Messrs. Boot & Chadwick have adopted the continuous corridor plan, and their elevation is a good study in French Renaissance. Mr. Coates Carter has borrowed from the Birmingham Assize Courts and the Imperial Institute rather too liberally in making his elevation, which, however, does not seem to have suffered thereby. Mr. John Robinson and Mr. Campbell Jones, 96 and 99, have each a creditable design both as regards plan and elevation. The elevation of 96 looks rather too much like a theatre,—that is, like what a theatre ought to be; not like what most of ours are. But the design, as a design, is well grouped, proportioned, and detailed.

No. 123, by Mr. Paul Ogden, is one of the most successful of the designs that have the corriders laid out at right-angles. They are double, and of L shape, parallel to the Pinstone and Surrey street frontages. The whole outline of the building is, too, of the same form, no effort having been made to fill up corners. The reception rooms are in the usual place; the Council-chamber, too, is opposite to them, and reached by a "grand communicating state corridor," which is another name for a space under a great central tower. The Accountant's general office is under the Council-chamber, which, owing to the shape of the plan, faces the churchyard. The whole is symmetrically and well arranged. No. 130, by Mr. W. J. H. Leverton, is another good plan, in which the author has departed from the common arrangement. A courtyard is formed, open on the Surrey-street side. The rooms are placed to right and left of a long central corridor which leads direct from the main entrance to the rear of the site; the scheme works out fairly well except for the circumstance that the corridor would be badly lighted.

Messrs. W. H. Seth-Smith & Fenning, Messrs. Heathcote & Rawl, Messrs. E. H. Selby & H. S. Daniels, and Messrs. Dunn, Hansom, & Dunn, have all good plans of the type so frequently mentioned, and Mr. Alfred J. Pilkington's is also a good one. It is due to these gentlemen to say that the accident of the order of hanging is alone responsible for the fact that other plans have been more fully described. A large number of the schemes are practically identical in their general arrangements; it would be of no public interest to go into the smaller details in which they differ; and it is therefore not desirable to attempt to decide upon the comparative merits of the individual designs.

As regards the plans as a whole, no one appears to have gained very much by departing from the simple and obvious arrangement of the continuous corridor on all four sides, more or less modified to provide for future extension and to bring in the large office required in the Borough Accountant's department on the ground-floor, as well as to provide a quiet situation for the Council-chamber. A large number of designs are of great merit, and would probably work out considerably more than creditably. On the other hand, there is nothing of a very striking character, except, perhaps, Mr. Stark Wilkinson's plan, which, however, is not as good in its details as some of the others, and is wedded to an inferior elevation; it suffers, too, from comparatively careless draughtsmanship. The elevation of No. 73 is the most original, and would be the most successful of those exhibited if it were not cut in half by the tower, which is out of scale with the delicate detail of the side portions. Judging by these unsuccessful designs the six selected ones must be very good, and may very probably include two or three that will startle the architectural world when their turn comes to be seen.

The Sheffield public appears to take a considerable interest in the Exhibition; the rooms in the Mappin Art Gallery, where the drawings are hung, attract a comparatively large number of visitors of all classes, although the building is at some distance from the centre of the town.

PHEIDIAS AND THE PARTHENON.

NOT a little excitement was caused, even beyond the limits of the archæological world, by the report current about a month ago that Dr. Puchstein (Assistant-keeper at the Berlin Museum) had discovered, or believed he had discovered, that the Elgin marbles were "not from the hands of Pheidias himself, but probably from that of Kallimachos, who lived later." The report appeared in the *Standard*, December 16, 1889, from which we quote. Of course, no serious archæologist has for long enough ventured to assert that the decorative sculptures of the Parthenon were literally "from the hands" of the great master. Probably those hands were better employed finishing off the chryselephantine statue of the Parthenos. The point is, were the sculptures of the *date* of Pheidias and the design by him? Here Dr. Puchstein's investigations promise to be of the deepest interest, and, as this interest is of a special kind to English readers, we translate in full the report of Dr. Puchstein's speech made at the "Winckelmann" anniversary festival at Berlin, and just published (Jan. 18) in the *Berliner Philologische Wochenschrift*. There may be internal reasons of which we know nothing, but in passing we may note that the *Wochenschrift* is almost a proverb of belatedness, and why a speech made December 9, on a subject of the greatest interest, cannot be reported till January 18, remains to the outsider a mystery. "At the end of the meeting Dr. Puchstein made the following remarks on Pheidias:—Of the art of Pheidias, whose works have entirely perished, the student is obliged to frame his conception from a study of the closer copies of the Athene Parthenos, and by the comparison of these with other works of the fifth century B.C. This leads to the conclusion that a peculiar characteristic of the original of the Parthenos was the markedly strong and simple treatment of the drapery, a style not specially adopted by Pheidias in the representation of the goddess out of respect for the Doric architecture of the Parthenon, but simply the natural result of the stage his own development had reached at the time. For the Parthenos, designed before 447 B.C., belongs to the same epech as,—*e.g.*, the Hippodameia of the east pediment, or the Tortonia Hestia. There is, therefore, no justification for the attribution to the original of the Parthenos of the full freedom of style observable in the pediment sculptures or the frieze of the Parthenon. Nor, again, can we justifiably ascribe to Pheidias or his workshop this new, and especially in the treatment of drapery, more highly-developed style. Further, the composition of the pediments and the frieze do not date from Pheidias. For the one composition known to us in detail which is certainly assignable to Pheidias,—the recently-discovered Birth of Pandora, on the Pergamene Parthenos, answers closely in style to the centre group of the Olympian pediment. On the true sculptor of the Parthenon marbles (with the exception of the Metopes) it seems possible, by means of certain technical evidence, to lay a tolerably sure hand. The pediment figures and the frieze are the oldest sculptures in which the so-called *running borer* was employed. They and the reliefs of the Nikė balustrade differ from other contemporary and later sculptures precisely by such effects as are producible by this instrument, which effects are absent in these other sculptures,—*e.g.*, Parthenon Metopes, frieze of the Theseion, the greater portion of the frieze of the Nikė temple, the Nikė of Paionios, which are all executed without the 'running borer.' According to Pausanias, Kallimachos, the inventor of the Corinthian capital, was the first who worked marble with this borer. That this discovery was made just at the time when the Parthenon pediments were set up (434 B.C.) is evident from the fact that

the borer was not employed in the Ionic capital of the Propylæa, which was begun in 437 B.C., but was already manifestly in use in the capital of the Niké temple (B.C. 430 circ.). Hence it is not unlikely that the discoverer of this new technique, Kallimachos himself, was the very man who executed the Parthenon pediments, and that in them we may recognise instances of the 'elegantia et subtilitas artis marmorariæ' for which he was famous." Evidence of this strictly technical character is, we need scarcely point out, of more value than pages of vague discourse as to style. We wait for the full illustrated demonstration which is looked for from Dr. Puchstein, and meanwhile only note that, so far as we can judge, the theory that the marbles are later than Pheidias seems at once more important and more convincing than their attribution to Kallimachos.

NOTES.

THE proposed plan of the County Council for treating the portion of the Strand adjoining the Church of St. Mary does not promise well for the manner in which this part of their work of improvement is to be dealt with. Instead of attempting to preserve an open space in the line between the churches of St. Mary and St. Clement Danes, so as to get the greatest combined effect from the two buildings, the plan shows a scheme for a block of buildings with an irregular bulging curve of frontage projecting southwards of the present line of Holywell-street, crossing the line connecting the two churches and partially shutting out the one from the other. It has over and over again been urged, in our columns and elsewhere, that advantage should be taken of the opportunity to make a small strip of garden occupying the greater part of the space in the line between the two churches, with the roadway on each side of it; thus introducing a new and agreeable feature in the scene while bringing the two churches together as portions of a great architectural group. If this were well done, it would have a fine effect, and would be one of the best architectural improvements that has ever been made in London, and one that we believe would be fully appreciated. The laying out as proposed in the County Council plan would render any such effect for ever impossible, and entirely muddle and throw away a great opportunity. It is to be hoped this ill-devised scheme will be reconsidered. We have been spoiling all our best chances for London improvements, in an architectural sense, for years past; and it is very disheartening to see the same thing beginning over again under the new governing body.

MR. COURTENAY BOYLE having recovered from his indisposition, the Railway Rates Inquiry was resumed this week, and a large portion of the case for the railway companies disposed of. The representatives of no fewer than seven companies were examined on Monday (including the South-Eastern, the Great Eastern, and the Brighton line), and Sir Henry James stated that the case for the railways would probably be concluded this week. Mr. Staniforth, for the last-named company, made a statement which will surprise many,—including, perhaps, Brighton shareholders themselves. He says that their goods traffic, of itself, is carried at a loss. Earlier in the inquiry it was stated on behalf of another company that a certain description of traffic was carried at a loss on account of the low rates charged, upon which it was promptly pointed out by Mr. Balfour Browne that this state of things proved that an undue preference existed. He contended that in such a case the company must recoup themselves by charging proportionally unfair rates upon other classes of traffic. In the case of merchandise sent by the London and Brighton line, it certainly cannot be urged that the loss is caused through unduly low rates being charged; nor, on the whole, that exceptionally high passenger fares are charged. "Cheap trippers" are favoured to such an extent that the *average* passenger fares on this line are not very excessive; and yet, apparently, the whole of the dividend is derived from them, besides a certain sum to make up for the loss on merchandise. Nothing, perhaps, which has previously transpired during the course of this inquiry, has so exemplified the difficulty which the Board of Trade has to overcome in deciding as to the reasonableness of the rates claimed for merchandise; for it illustrates in such a forcible manner the widely-differing circumstances under which the traffic is carried upon different systems. Some are entirely dependent upon their goods traffic; while others, it appears, are not only independent of it, but find it a clog,—even while charging rates which are often loudly complained about. But as it is practically out of the question on most lines to advance passenger fares, the margin for all contingencies must necessarily be provided for in fixing the maximum goods rates.

THE disaster at the Forest Gate schools, by which, early in the morning of New Year's Day, twenty-six poor lads were suffocated by the smoke from a fire,—which broke out, it is now supposed, through the ignition of some soot in a disused fireplace behind a wooden chimney-board,—is fraught with two or three important lessons. We have refrained from commenting upon the case while the inquest has been pending, but now that the jury have given their verdict, which does not impute culpable negligence to any one, we may say that we quite agree with the very obvious recommendation of the jury that where fireplaces have to be blocked up (especially those beneath flues into which iron stove-pipes from detached stoves are led) iron plates should be used instead of wooden screens. We also agree with the jury in thinking that there ought to have been a night watchman, and that there should be a responsible officer in charge of each dormitory every night. Boys ought not to be locked in alone. We cannot but think that in all probability none of these poor boys would have lost their lives had proper precautions been taken. In going over Dr. Barnardo's Home for Boys at Stepney nearly two years ago (see *Builder* for March 17, 1888) we were much impressed by the admirable precautions there taken to prevent catastrophes of this kind. In that institution a watchman (checked by a "Lincoln" tell-tale) visits each dormitory every hour. In a corner of each dormitory is a bed-room (with a window looking into the dormitory) for the officer in charge of that dormitory. In each of these officers' bedrooms is a button, by pressing which any officer on any floor can immediately open the safety-doors of *all* the dormitories. These safety-doors open on to an external iron staircase, specially provided for use in case of fire. The opening of these doors is effected by electrical apparatus, and the pressing of the button in any of the officers' rooms not only throws open all the fire-escape doors, but sets ringing a powerful alarm-bell in each dormitory. This bell continues to ring until the door is set wide open. The action of these doors is tested daily, and, as a further precaution, each dormitory officer is supplied with a key which may be used to open either of the doors in case of the failure of the electric current. The electric locks, &c., are by Mr. Julius Sax.

IT had been expected that operations would be now commenced on the Argyllshire Railway, a work sanctioned in the Session of 1887, and intended to be carried out at once, but afterwards, for various reasons, delayed from time to time; but further unexpected causes of delay seems to have supervened. This scheme, an account of which was given in the *Builder* of December 31, 1887, is to connect Glasgow and converging lines with Loch Crinan, an inlet of the Atlantic, by way of Helensburgh, Holy Loch, Loch Fyne, and Glen Air, a distance in all of about forty-six miles, eleven of which are over water. The most interesting feature, perhaps, is the crossing of Loch Fyne, between Newton Bay and Furnace, about fifteen miles from the head of this long arm of the sea, where it is barely one mile in width. Here the trains, passenger trains as well as goods trains, will be ferried over bodily, accompanied in each case by the locomotive, which, by an ingenious adjustment of shore levels, will be enabled to draw its load on board at all times of tide, and in like manner steam on to the land-rails at the other side. It is expected, also, that from each crossing locomotive will be drawn the steam necessary for working the engines of the boat, thereby obviating the need of a separate force of firemen — an important matter where the trains, in winter at least, will amount to no more than two or three daily each way. From Helensburgh, on the Clyde, traffic will be transported by water to Sandbank on the Holy Loch where the new line begins, a distance of about ten miles. This service will be performed by the boats of the present North British Railway Forth Ferry between Granton (Edinburgh) and Burntisland, to be discontinued on the opening of the Forth Bridge now impending; and it is to differ from the mode of the Loch Fyne crossing above described, inasmuch as passengers will embark in the ordinary way, and no locomotives will be carried. For the goods traffic there are special boats with rails, on to which the trucks are lowered by an inclined plane, consisting of a hinged gangway which rises and falls with the tide. The new line crosses from the Holy Loch (an inlet of the Clyde estuary opposite Greenock) to the shores of Loch Fyne by way of Glen Eck, over the moderate summit level of 120 ft. only, and with a gradient which at no point exceeds 1 in 50. From Loch Fyne to the Atlantic seaboard at Crinan there is stiffer work, a summit level of 400 ft. having to be surmounted, but, the line being a single one and designed for light loads only, this will be overcome without difficulty. Within a few miles of its western terminus the new line throws off a short branch to Ardrishaig, on the inner shore of the Cantyre isthmus and an important tourist station, being the eastern termination of the Crinan Canal through which the chief stream of the summer Hebridean traffic is attracted. From the Loch Fyne Ferry there will be a boat connexion with Inverary, which is the capital town of this region, though really of quite small dimensions. The estimated cost of this ingeniously-devised line is 180,000*l.* only, with powers to borrow 60,000*l.* more. It will be in the hands of the North British Railway Company. Last week an inspection of the route was made by a company, consisting of Mr. Aird (of Messrs. Lucas & Aird, contractors), London; Mr. Forman, Glasgow, the engineer of the line; Mr. Walker, the general manager of the North British Railway Co., and some others.

THE failure of the Chelsea Trustee Savings' Bank raises the question whether the time has not arrived for an Act of Parliament to be passed putting an end altogether to this class of savings' bank. Not very long ago the Cardiff bank failed, and now comes the collapse of the Chelsea bank. By the institution of Post Office Savings' Banks, the country has laid it down as a principle that it is the duty of the administration to give facilities for thrift. Now that a national system of savings' banks exists, the necessity for trustee savings' banks has ceased. It would be far better, therefore, if these amateur institutions were taken over by the Government, depositors having their accounts transferred to a Post Office bank, and being allowed on old deposits the same interest as they now receive. It is a distinct blow to habits of thrift when institutions such as the Chelsea Bank collapse; and as this class of bank is gradually dying out, it would be better at once to administer a death-blow to the old system. At the same time, it may

be well to point out that the Post Office fails to bring the national system sufficiently home to the poorer classes. Leaflets pointing out the way in which money can be invested at post-offices should be distributed at all houses once a quarter by the postmen who deliver letters. These would reach thousands; at present men must go to the office for information, which many artisans and labourers will not do.

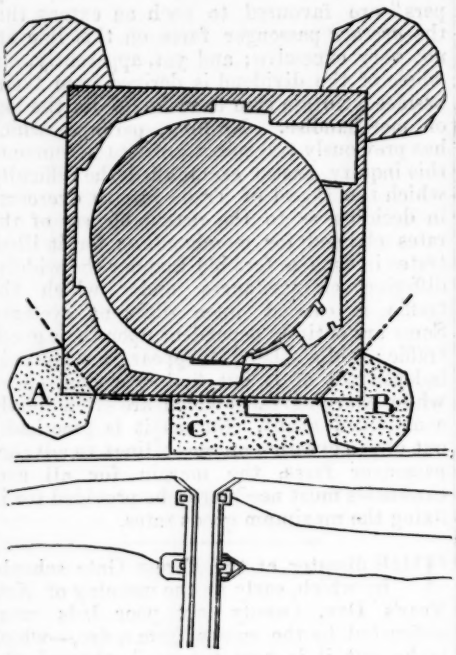
A CASE is reported in the current number of the Law Reports, which at first sight is likely to puzzle some readers We refer to the decision "*In re* an arbitration between the London, Tilbury, and Southend Railway Company and the Trustees of the Gowers Walk Schools." The facts were that the Trustees of the Gower Schools erected a new building on the site of an old one, the windows of which enjoyed a presumptive right to the light. Some only of the new windows coincided with the old ones, and therefore in the case of an ordinary obstruction no complaint could have been made except in regard to the coinciding windows, as they may be termed. The above Railway Company erected a warehouse on the opposite side of the street to which the schools were, which obstructed the light both to the coinciding and the non-coinciding windows in the new building. The question then arose whether compensation could be claimed in respect of both classes of windows. The Court held that it could be, because under the statute all damages of whatever kind were to be paid by the Company under the Acts of Parliament by which the matter is governed. To say whether the decision be right or wrong would raise a long and complicated argument; it is sufficient now to state the actual result of the decision.

NOT one of the forty-nine designs sent in for the "New Houses of Parliament Competition" for Rome has been considered suitable for the purpose. Five premiums of 5,000 fr. each have, however, been distributed, the winners being the architects Moretti, Broggi & Sommaruga, Quaglia & Benvenuto, Basile, and Ristori.

COLOGNE is to have a memorial statue of the late Emperor William,—the figure on horseback, but whether in connexion with a fountain, as suggested, is as yet uncertain. The cost is not to exceed 15,000*l.*, and the design will be selected in competition amongst German artists only. The names of the jury are published, and consist of five gentlemen, namely, two architects, two sculptors, and one painter. There will be five prizes,—one of 300*l.*, one of 200*l.*, and three of 100*l.*

IT seems that there is a section of traders in the West of Scotland opposed to the formation of the proposed Forth and Clyde Ship Canal. The promoters are doing their utmost to convince their opponents that, instead of being a disadvantage to the Clyde, the canal would still further develope shipping and commerce in Glasgow. It is considered that the North of Ireland would be greatly benefited by the canal, and the scheme has been most favourably entertained in that quarter. Baltic traders are also said to be in favour of the project. Meetings are to be held in Edinburgh and Glasgow for the purpose of discussing the scheme with a view to disarming opposition to an application to Parliament for the necessary powers.

WE have before mentioned that important works are now being executed in Rome for the improvement of the Tiber, but that, unfortunately, these works, which are indispensable for the hygienic condition of the city and for its growth, have considerably damaged some ancient monuments. (See *Builder*, April 6, 1889, "Ancient and New Bridges across the Tiber.") At this moment, the construction of the great drain on the right shore, and of the embankment wall, is said to necessitate the demolition of a great part of the Mediæval fortifications belonging to the Castle of St. Angelo, especially of those near the river (see plan). It is very difficult



to ascertain the exact date at which the castle was first used as a fortress; some say this happened under Honorius, about A.D. 423; others, on the contrary, are of opinion that Theodoric, King of the Goths, was the first to fortify the Mausoleum of Hadrian. At any rate, it is certain that since the fifth century it has been used as a fortress. In the course of its later history it was temporarily occupied by the adventurer Crescentius Nomentanus, who endeavoured to revive the ancient office of Consul in his own person, and increased the fortifications to defend himself against the Emperor Otho III. From this personage it acquired the name of "Castellum Crescentii." In the eleventh and twelfth centuries it was held by the Orsini. The castle was reduced to its present condition by Alexander VI. in 1499, as we learn by the great inscription which can still be seen on the castle keep. Pope Borgia faced with masonry the central part of Hadrian's edifice, which had become a simple mass of stones after its coating of marble blocks had been removed. He put a finish to the repairs by a row of battlements, which can still be distinguished perfectly well among the subsequent repairs executed on the summit of the castle by order of Paul III. and Clement VIII. Alexander VI. completed also the covered gallery which leads from the castle to the Vatican, begun by John XXIII. on the foundations of the Leonine walls. But the most important parts of the works executed by Pope Borgia are doubtless the fortifications round the Mausoleum, consisting of four strong polygonal bastions, built of masonry, with travertine angles, and a scarp; the whole was surrounded by a moat, very deep and wide, in which the Tiber water flowed. The bastions were united by a very thick stone wall, faced with masonry, and battlemented. The works were confided to Tuscan artists, under the direction of Sangallo, who had already built the forts of Civita Castellana and of Subiaco, and some towers for the defence of the coast, by order of Pope Borgia. It is the front part of Sangallo's fortifications that the office of "Genio Civile" now proposes to demolish for the improvement of the Tiber, and by this scheme the two foremost bastions, A. B., and a great part of the wall that unites them, would be destroyed. A general cry of indignation has risen against this project, which would injure one of the most characteristic monuments which have come down to us from the Middle Ages. But, fortunately, the last word has not yet been spoken, and it is hoped that good sense will triumph, and that the Office for the Preservation of Ancient Monuments will resolutely oppose the fulfilment of the scheme. Captain Signor Borgatti will shortly publish an important book, the outcome of patient and diligent researches for some years past, concerning the castle.

THE last number of the *American Journal of Archæology* (vol. v., No. 3) is in the main devoted to a full report of the American excavations at Sikyon, the chief interest of which has certainly centred in the theatre, and especially in the arches by which the κοῖλον was entered on either side. A detailed plan is given, and two views,—one of the stage foundations, the other of the seats and conduits surrounding the orchestra. The report is written by Mr. M. L. Earle, a member of the American School, and he also publishes the one statue of any considerable interest found at Sikyon; he devotes to the interpretation of this work an amount of learning and careful ingenuity which we must say seems to us excessive, and finally concludes that we have in it a statue of the youthful Dionysos, of good workmanship, a product of Sikyonian art, and that the work may be assigned to the third century B.C. So far, few will dispute his conclusions, but Mr. Earle goes on to say that presumably it is by one of the more distant followers of Lysippus,—for this not a scrap of positive evidence is advanced; further, we are told that "Thoinias, son of Teisikrates, was active at Sikyon and elsewhere in the Greek world in the middle and latter half of the third century B.C.," and last, that "we have in our work a certain pan-Hellenic spirit, such as we may apprehend could have been exhibited by Thoinias." The reader is left with a sort of shadowy implication that the statue may, or might, or could have been by Thoinias. The desire to bring literary and monumental evidence into relation is just now engendering a perfect plague of hypothetical attributions, and it is a tendency against which, in the name of English common sense, we feel bound to protest.

IN connexion with the University Extension Society, Miss Harrison intends to give a course of ten lectures on "Athens, its Mythology and Art," on Friday afternoons, at 5.15 p.m., commencing January 24. The first lecture will be given at the Chelsea Town Hall; the remainder of the course at the South Kensington Museum. According to the prospectus issued, the aim of the lectures will be to give a detailed picture of the City of Athens; its rise from the small beginnings of a primæval rock city; its growth and development. The course will embrace not only the famous monuments, already widely familiar, such as the Parthenon and the Dionysiac theatre, but also recent discoveries about the agora of Athens, its great hospital known as the Asklepieion, and the early temple of Athene on the Acropolis lately laid bare, as well as the remarkable series of archaic figures found near the Erechtheion, which have gone far to revolutionise existing theories as to early Greek art.

UNDER the supervision of an officer of the Royal Engineers, workmen are engaged in removing a portion of the Castle Rock of Edinburgh. Such an operation would justly be stigmatised as an act of vandalism were it not a necessity. It appears that certain portions of the rock to the south-east, below the junction of the old hospital and the surgeons' quarters, have become loose, and that there is danger of their falling upon the roadway beneath, with the probable result of damage both to life and property. Besides a quantity of *débris*, there has been removed two masses of rock containing about 30 cubic feet and 50 cubic feet respectively, and of the weight of about 3 and 4½ tons each. There is another huge boulder, estimated to weigh between 50 and 70 tons, which looked at from certain points of view seems to be in a very dangerous position as regards stability, but when looked at from above it seems to be securely placed. The chief risk involved in leaving it where it is arises from the fact that there is a space behind it and the solid rock

where water may lodge, which, if frozen, would by expansion loosen the boulder and cause its dislodgment. Efforts have been made to remove this mass of rock, but, as yet, unsuccessfully. It is stated that from its position it would be very difficult to dispose of it in detail, and to remove it in mass, in regard to which there would be little difficulty, would be most dangerous. The operations are carried on in a very simple manner by means of a rope attached to the bars of a window in the basement of the surgeons' quarters, which reaches to the base of the rock; by this means the workmen, by dint of hard scrambling, attain the point to be operated upon.

IMMEDIATELY to the eastward of the scene of operations above referred to similar work had to be done, several years ago, on the southern bank of the esplanade. This bank exhibits what Sir Roderick Murchison considered one of the most interesting and instructive lessons in geology. The Castle Rock consists of trap rock almost perpendicular on the three sides to the north, west, and south; but there is a gradual slope from the east side forming the esplanade. This slope is formed principally of earth, through which there run layers of sandstone; and it was these layers of sandstone which gave way, where exposed, and had to be operated upon. The theory of Sir Roderick Murchison was that, during the geological period, the rock stood in the midst of a vast stream flowing from west to east, and that the esplanade was formed by the deposits made by that stream.

BY order of the late Miss Edwards's trustees, as appointed by her will, the freehold of Langham House,—No. 11, Portland-place, western side,—will be offered for sale by auction at the Mart on the 17th proximo. This mansion and its opposite neighbour recall, by their names, the original Foley House and the once adjoining residence of Sir James Langham, Bart. Foley House is distinguished by name in R. Wilkinson's Map of London, 1799, and is shown with grounds extending from Mortimer-street to Duchess-street. It is also cited in John Lockie's "Topography of London" (1810), as being on the eastern side of Chandos-street. Here it remained for a few years more; its low elevation and high wall stretching across the southern end of Portland-place, where a few of the garden trees are yet preserved. It is said that Lord Foley, himself not a rich man, gave the means wherewith to live to Lord Mansfield before he had begun to earn much at the Bar, and here, until recently, stood the town mansion of the Lord Chief Justice's successors in the peerage. Southwards lay the former Langham House, of which John Nash was architect—according to a note written by Frederick, father of the late John Gregory, Crace, on one of the two water-colour views thereof in the British Museum. The eastern front had along its entire length an octastyle portico, of the Ionic order. Foley-house was purchased for 70,000*l.* for the laying-out of Regent-street, over the sites in this quarter of the then Ogle and Bolsover-streets. Nearly the whole of the sites of the three houses we mention is occupied by the Langham Hotel, erected about twenty-five years ago, from the designs of Messrs. Giles & Murray, architects.

WE read that the Right Hon. W. H. Smith, M.P., has subscribed 2,500*l.* towards the restoration fund for the two churches of the united living of St. Germoe and St. Breage, near to Helston, in Cornwall. In the churchyard of the former is a supposed burial-vault over which stands a stone seat, carved in stone, popularly known as the throne of King Germocus, or Saint Germoe's chair. It measures about 6 ft. by 3 ft.; the central division of the triple seat bears the carving of a head with an ancient crown; on the other side are three rounded columns carrying two pointed arches. In St. Breage Church are monuments of the Godolphin family, including one to the wife of the first Earl (1678) Godolphin, *olim* Godolean, is the name of a hamlet in Breage. William of Worcester mentions "Godollen Castle" in his Itinerary of Cornwall, *temp.* Edward IV.; the "Carne Godolean" is cited by Leland. Sir Francis Godolphin, who rebuilt the castle in Queen Elizabeth's reign, effected productive improvements in the working and smelting of the tin and copper ores of this district. His descendant, Sir Sidney, was elevated Baron Godolphin of Rialton, and advanced Earl Godolphin. He was the celebrated Lord High Treasurer in the reign of Queen Anne. In 1744 these estates passed to the house of Osborne by the marriage of Mary, sole heir of Francis, Lord Godolphin, with Thomas, fourth Duke of Leeds.

MR. BRUDENELL CARTER'S lecture at the Society of Arts on Wednesday, on "Practical Vision-Testing," ought to be of interest to the general public as well as to scientific men. The fact, as stated by Mr. Carter, that a red-blind eye nevertheless sees a red light, not as red but as a fainter light than a white one of equal intensity,—a different light in one sense but not in the intended sense,—shows how unsatisfactory a railway-test must be in which a man is merely asked to say which of three lights is red, green, or white, he knowing beforehand what colours are among the three. As Mr. Carter says, the object of a test should be not merely to show that a man does not make a mistake in one instance, but that he will not make mistakes in a number of instances. Holmgren's test, which Mr. Carter recommends, requires a man to select from a number of variously-coloured skeins all that tally in colour with a given sample, without troubling him with names. This, it is obvious, if properly carried out, must be a severe test of colour-perception;* quite different from showing a man two or three coloured lamps to pick out the "stop" signal from. An engine-driver at the meeting, who questioned whether any railway accidents had really been traced to want of perception of colour on the part of the driver, may have been right, as drivers are always taken over the road many times before working it themselves; but the possibility of such an accident ought to be ensured against by a real and not a possibly fallacious test.

AS might be expected, the artistic interest of the exhibition of "Works of Art connected with Sport" at the Grosvenor Gallery is not of the highest. There are some good pictures, and others which are historically interesting; among the latter may be named the two cricket pictures, that by Richard Wilson "Cricket at Hampton Wick" (75), painted for David Garrick, and the well known one by Hayman belonging to the Marylebone Cricket Club, and representing "Cricket in Marylebone Fields" (111). In this are shown the curved bat of the period, and the wicket consisting of two stumps only; and both show the old cricketing costume with the tall hat, to our modern ideas so peculiarly unsuitable to any athletic game. There are naturally a good many Landseers, among the most interesting of which are the well-known large picture of "The Swannery Invaded by Eagles" (68); the small sketches and studies of stags and dogs in the East Gallery; "The Pensioners" (135), a couple of old hunters in a paddock excited at the sight of the hunt; and the life-size picture called "The Chase" (189), a stag pursued by a hound, a picture which was painted, it appears, to serve as a target, but which the owner framed, and Landseer completed the picture by adding the dog and placing his nose so as to cover the mark that had been made as a bull's-eye to show the right spot for hitting a deer. The agonised expression of the hunted animal's eye is painfully true. Landseer's portrait of himself with two dogs looking over his shoulder at his drawing, "The Connoisseurs" (115) is a welcome old friend; but the well-known painting of "The Sanctuary" (67) looks sadly hard and commonplace now. Ansdell's "Grouse Driving" (185), painted fifty years ago, though old-fashioned in style, is a real picture, beautifully composed, and far less hard and finer in colour than the works of the artist's later years. One of the finest paintings in the gallery is "The Lost Royal" (172) by Mr. Stuart Wortley, who first made his mark at the Grosvenor Gallery with a sporting subject; this shows a hunted and exhausted stag crouched on a hill overlooking the sea. Randolph Caldecott's "The last Flight" (178) and Rosa Bonheur's "Otter-hounds" (166) are among the fine paintings in the collection, and Ward's "Cub-hunting" (58), a huntsman taking a leap (very different from the average hunting picture, and reminding one rather of Morland), and some of Stubbs's horses. Of the arms the only specimens that are of artistic interest are some of the old powder-flasks in the cases in the East Gallery. There are a number of specimens of plate which have been made as turf prizes, of which it may be said that the majority of the modern ones exhibit not the slightest artistic interest or value of any kind, and only serve to illustrate painfully to how low a pitch English taste, invention, and execution have sunk in such matters.

* Holmgren's test is fully described, and illustrated by examples, in Mr. Charles Roberts's little work on "The Detection of Colour Blindness and Imperfect Eyesight" (J. & A. Churchill; 1884).

ROYAL INSTITUTE OF BRITISH ARCHITECTS:

THE PRESIDENT'S ADDRESS TO STUDENTS.

THE fifth ordinary general meeting of this Institute for the present session was held on Monday last, Mr. Alfred Waterhouse, R.A. (President), in the chair. The minutes of the recent special and business meetings having been read by Mr. Aston Webb, hon. sec. (in the absence of Mr. William H. White, the Secretary, who was said to be suffering from influenza),

The President said: Before we proceed to business, perhaps you will allow me to express the sorrow I feel as a member of the jury in the competition for the refronting of Milan Cathedral, that an architect of very great promise,—Signor Brentano,—whose design was selected above all others as best fitted for adoption, has died, at the early age of twenty-seven. I believe that little or nothing had been done towards realising his project before his death, and his loss is certainly a very great one, not only to Italy, but I may say to Europe.

The President then delivered the following address to students:—

Gentlemen,—Last year, when I had the honour of addressing you before the annual distribution of prizes, I spoke to you on the subject of competitions, and ventured to give a few hints to those who might be intending to try their fortunes in these contests. Having lately had fresh experience of the vital interest this question must possess to most young architects, I propose this evening again to revert to the subject, with a few remarks on a recent competition.

I should be glad to think the day not far distant when competitions would be rarely, if ever, resorted to, except for works of the greatest national importance. I lament their frequency chiefly because of the enormous amount of unproductive labour they involve, and I confess I do not see at present any tendency towards their diminution. This being so, it seems most important that those who are concerned as assessors in drawing up instructions should see that they are prepared not only to secure the best results from the promoter's point of view, but also to subserve as much as possible the interests of the profession,—first, by saving the architects competing from all unnecessary work; and secondly, by not hampering competitors with vexatious restrictions, thus leaving them free to solve in their own way the problem put before them, without the feeling that if all the accommodation asked for is not exactly of a certain size, and every room of certain dimensions, they will be adjudged out of the competition. I would have every competitor put as nearly as may be in the position of an architect acting for a private client, who, though he may have suggested his requirements, would probably listen to his professional

adviser if he gave good reasons for not literally adhering to them in all cases. I have endeavoured, when acting as assessor, to use my influence to keep the instructions thus elastic; but I have frequently had to regret that they had not been more so, when, after the designs themselves had come under review, some of general excellence had to be set aside for breach of conditions in some point of minor importance, on which the instructions, unfortunately, had been allowed to speak too decidedly.

Having lately, as I have already hinted, been engaged upon such a labour (a very arduous one, owing to the way in which the profession had responded to the invitation) in the first or sketch competition for the Sheffield Municipal Buildings, and being very much interested in the work, and full of the subject, I have thought that I could not do better to-night than bring before you some special facts in connexion with that competition and some special considerations which may prove of use to some of my hearers.

The instructions in this particular case were issued in August last, and invited certain drawings to $\frac{1}{16}$ in. scale,—viz., a plan of each floor of the proposed building, two cross-sections, and one elevation. They were all to be on stretchers of the smallest possible size, — 2 ft. by 1 ft. 6 in.,—so as to be kept near the eye-line when hung on wall or screen, and easily handled for reference. No mottoes or distinguishing borders or devices were allowed. When a case containing a design was opened, it was numbered by a progressive number, and every drawing and document within the case was marked for identification with the same number. Alternative schemes were ruled out of court altogether; for I believe that, as a rule, those architects whose exuberant imagination would induce them to send in alternative schemes, or to cover their plans with flaps, showing how they could vary their arrangements, lose much by so doing. They may show themselves men of varied resources, but hardly architects convinced of the perfection of the scheme they propose for adoption; and I submit that the time spent in preparing two schemes would be much more profitably spent in perfecting one.

I must, however, ask permission to leave Sheffield for the moment, to tell you of one exception to this rule which I encountered many years ago. It was in a competition for the Bristol Assize Courts. I was asked by the Corporation to assist them in awarding the three prizes they had to dispense for the first, second, and third best designs among those sent in which agreed with their instructions. I had not much difficulty in discovering what, in my opinion, were the best of the series, nor of placing them in their order of merit; but, though they were in different types of Gothic,—one round-arched, another thirteenth-century, and the third of a later style,—I confess I was somewhat troubled in divining, and that for two reasons, that they were all by the same hand. The first it was difficult to be sure about, as the lettering, mounting, and colouring of each set were entirely different, as well as the styles and disposition of plan; but they had all a vigorous character and individuality about them which appeared to flow from one and the same source of inspiration. Secondly, they all showed on their block plan an insignificant feature of an adjacent building, which I had myself observed in visiting the site, but which was not on the lithographed block plan given to each competitor, and which was omitted from all other designs in the room. When meeting the Committee, therefore, for the purpose of making my report, I thought it desirable to inquire whether it would in their opinion be proper to give all three prizes to one competitor, provided the three designs, best, according to the judgment of the assessor, should prove to be by one and the same hand. At first they said "No"; but one of the Committee, who appeared to be conversant with affairs of the turf, remarked that if he entered three horses for a race, and they all three reached the winning-post before the rest of the field, there was no reason against his being accredited with the first three places; and that what was fair with horses was equally fair with architects' designs. This argument settled the point. I gave my award, the seals were broken, and the late gifted E. W. Godwin carried off all three premiums. What Edward Godwin might venture upon with success, it is not given to everybody to imitate with equal success,—and, as it was, this brilliant exploit did not secure him the execution of the work. Another competition was decided upon, in which, after what I have told you, I declined to act again as assessor.

But to return to Sheffield. The accommodation there required was given in the form of a schedule, in which the sizes of rooms were only suggested sizes. A general compliance with the dimensions contained in this schedule was all that was insisted upon. The total number of superficial feet of suggested accommodation was also given at the end of the schedule, the blank columns of which had to be filled in by each competitor to show at a glance what he was providing in each particular case, and also what was the total aggregate of his accommodation. The schedule so filled up has been of the greatest use in the examination and comparison of the different designs.

As usual, no sooner were competitors fairly at work than numberless letters came from them on the subject of the instructions. They did not like being compelled to limit the amount of their work, and would have preferred sending in more drawings. Partners would have liked each to send in a separate design. Others wanted to make more elevations, and detailed drawings, and perspective views. In fact, it seemed difficult for some of them to see that the rigour of the rule against receiving more than the prescribed drawings was really made in their interest, and not in that of the Corporation of Sheffield.

At length, in the beginning of October, it was thought that the time had come to send answers to all the questions which had up to that time been received. So on the 9th a copy of the printed replies to 121 questions was sent by the Town Clerk to everybody who had obtained instructions; after this we answered no further questions.

Early in December the designs were sent in, —178 in all. One of the competitors transgressed the instructions by applying a motto to his stretchers. Three or four other designs were sent in so unfinished as to be hardly in a condition to enter the lists; while a few,—but very few,—had not kept to the letter of the instructions in other points. On the whole, however, the competition was to be looked upon as a great success. An unusually large number of good thoughtful designs were submitted, many of them in their elevation showing an excellent originality. Whether the shape of the site, verging towards a triangle, suggested it or not I cannot tell, but a considerable proportion of the plans bore too great a resemblance to a recent building erected for a nearly similar use, the details of which I have reason to be familiar with, and which in some cases has been followed even to its faults. One of the greatest faults in the Manchester Town Hall has always seemed to me the position of its Council Chamber, overlooking as it does Albert-square, a position its architect thought unavoidable owing to the public hall occupying the centre of the site. But in Sheffield no public hall is required, and therefore that position is available for the Council Chamber; as is also the south front, where there is a good light, and no thoroughfare for carriages.

Perhaps owing to competitors not having been allowed to submit an elevation of the south front, which will in reality be very conspicuous even from a distance over the adjoining disused churchyard, many designs have a very jagged outline on plan on this side, something like the west coast of Norway, and which their authors would, I think, find it very difficult to clothe with dignity, or even picturesqueness, were they asked for its elevation.

The west front, an elevation of which was alone asked for in this competition, is about 200 ft. in length. Across the adjacent street on the north is a new building (the Yorkshire Penny Bank and Albany Hotel) about 56 ft. high, while on the south is the before-mentioned churchyard, with the church in its centre having a tower surmounted by a cupola. The height of the adjacent buildings does not appear to have been duly considered by every competitor; perhaps some had not visited the site; and no doubt the instructions suggesting the required accommodation almost exclusively on the ground or first-floor had a good deal to do with the unfortunate fact that this, the principal front of the Municipal Buildings, was sometimes drawn with a parapet not more than 45 ft. from the street level. The want of height in the horizontal features of the front has been, however, generally made up for either by a central tower on a line with the front, or by one set back behind the State apartments, which apartments naturally, in the greater portion of the designs, occupy this front (in the latter position the effect of such a tower would be in a great measure lost), or by a tower at one or other extremity of the front. In some cases this lateral tower was placed, not on the western front at all, but facing the side street just behind the principal apartments, where it would fulfil the useful function of interposing a break between the lofty State-rooms and the lower business offices which overlook the side street. These towers, many of them, show great ingenuity in their design. One had its square trunk surrounded by four gables, not subtending the whole width of each side, but long and slender, with a pierced arcaded parapet on either side in the style of Bishop Gower of St. David's, through which passed the high-pitched, slated, and hipped roof, filling in the angle spaces between the gables. The whole was surmounted by a well-designed flêche, and formed altogether a very original and elegant campanile. I dwelt on some of these Sheffield towers with tenderness, and, when they had to be put aside, with sincere regret. Many of them were of great beauty, and some few were entirely free from all suspicion of ever having served an ecclesiastical turn in another state of existence,—in fact, they seemed quite original. In some few instances a dome took the place of a tower. When placed behind intervening roofs the dome suffers more than the tower, but in one or two cases the dome was brought to the front of the building. These massive features do not in all cases stand on sufficiently massive supports. We are most of us occasionally tempted, or forced, to use iron or steel more freely than is desirable in support of walls, but would it not be well to make a rule to dispense with any feature of a non-essential character in a monumental stone building, whenever its introduction demands the use of iron girders and stanchions?

Another frequent feature at Sheffield,—like the tower, entirely optional (neither being mentioned in the instructions),—was the *porte-cochère*. Among the 121 questions was one asking whether such a feature might be thrown out beyond the prescribed area of the site. Leave to introduce this feature being in this way obtained, by far the greater part of the competitors availed themselves of it, but I cannot say generally to the improvement of their elevations. I would ask you why it is so difficult to make the *porte-cochère* marry with the elevation against which it is placed,—unless, indeed, the same treatment, *e.g.* arcading, is carried through the whole of the ground-floor of the front, and the *porte-cochère* also? I can conceive some unity of effect thus obtainable, even if the arches in the building itself were afterwards partially filled in. I say nothing about the draughtiness of the carriage-porch, and of the gloom it occasions in the interior of the entrance-hall, unless the latter happens to have windows beyond or above the roof of the feature in question. These disadvantages may be set against the comfort of being set down by one's carriage in the dry. It is its unfortunate effect on the elevation of the building to which I would draw special attention. By the great projection of the *porte-cochère* it hides half the front from view if seen in quick perspective; by its height and projection it seriously dwarfs the elevation; or, if to avoid these disadvantages it is kept very low, it looks very mean. Lastly, its peculiarities of construction involve too often a want of harmony between it and the building it serves. The best treatment I have seen is when the carriage-way goes behind an open arcade which supports an advancing central gable; and where the wings of the façade also advance there is, I think, much to be said for this arrangement. This, however, was not in favour in Sheffield, though in one case the carriage-way was carried within the walls of the building. I noticed, also, in connexion with the main entrance, that it seemed to be in many cases intended to provide a pair of heavy outer doors only, without the usual inner swing-doors, two pairs of which, one within the other, one would suppose necessary to keep out the wind on a western front.

At Sheffield I again observed what is but too general in most competitions, that the anxiety to get all the accommodation of the suggested dimensions into his plan has often prevented the competitor from observing that his rooms have been made of a proportion which would be intolerable if carried out,—*e.g.*, 50 × 30 × 12 6

high. Also, many plans that looked at first most promising were found to have their walls over voids, the chimney-stacks on the lower story giving no account of themselves on the upper floors, and staircases shown on plan which could never have been constructed.

Then, again, there is the great light question. In the majority of cases the use to which the light from small areas was put was the best possible,—that is, it was used to give side light to corridors, which, as they were seldom more than 7 or 8 ft. wide, could, of course, be lighted across their width much more easily than a room 30 ft. from back to front could be. And yet in other designs there were such rooms only about 12·6 high, and with windows inconveniently low for a room of such a depth,—even if the light came uninterruptedly from the horizon,—which windows were expected to give light enough for important office-work in a smoky town, where the buildings opposite were lofty. When such windows look into a deep and narrow area, nothing but disappointment must be the result. I confess that the exceptional favour some competitors expect from the sun fills me with amazement. For the sake of light, air, general cheerfulness, and architectural effect, it is most desirable that internal areas in a building should be as few and as large as possible, instead of many and small. If one large area be adopted instead of many small ones, which has, of course, the advantage of securing a much better architectural effect, it may be difficult to light the corridors only from this source; but if thus deprived of a continuous side light by the interposition of rooms looking into the area the skilful designer will see that they are never dark, especially at their extremities, where they turn, or where there is a change of level,—if, indeed, such be necessary in any case.

With regard to staircases, it ought not to be necessary to say that a principal flight of stairs in such a building could hardly with propriety have steps less than 6 or 8 ft. wide, with treads and risers 12 in. by 6 in., or, better, 12½ in. or 13 in. by 5½ in.; and that until you are able to secure so much ease of going and space in a single staircase it would be folly to think of double flights in the same staircase, still less of twin stairs in all respects repeating each other. One dignified stairway, well considered, thoughtfully designed, with something unusual in it, if attainable without sacrifice of convenience in any way, is infinitely to be preferred to a couple of commonplace, steep, and cramped ascents. In one design I observed that additional charm had been secured to such a single principal stairway as I have described for approbation, by allowing a business staircase to be separated from it merely by a stone screen or open arcade, so that one stair could be seen from the other, greatly adding to the effect of both. These business stairs also should be so placed as to be as accessible as possible from the offices in their neighbourhood, thus avoiding all needless traversing of corridors to reach them; and yet none should be inserted not absolutely needed. In no case should a staircase run up in the ordinary width of a corridor, so reducing its width and the view down it, as is common in gaols, and there permissible for a strictly utilitarian reason.

In municipal buildings in places where, as in Sheffield, there is no special residence for the chief magistrate, there will almost certainly be a suite of reception rooms. These rooms and the approaches thereto should be so arranged as to be cut off from the business portion of the building when required without in any way interfering with access to the latter; further, such rooms as the Council-Chamber and the Committee-rooms, while having, as is frequently found desirable, approaches from the corridors of the reception suite, should invariably be accessible also from the departmental corridors for ordinary business purposes. The corridors of approach to these reception-rooms should be at no point cramped, especially at the head of the grand staircase, or, on crowded assemblies, an inconvenient block will necessarily ensue.

Sanitary considerations make it imperative that closets should each be lighted with a separate window, and that the ante-room of approach should be lighted and ventilated otherwise than through the closets themselves. This is not always remembered by architects competing, who seem to forget that buildings which met with approbation some years ago may have sanitary arrangements then regarded as satisfactory which may now be condemned. One well-lighted and well-ventilated closet is worth half-a-dozen of the sort one so frequently sees on competition plans. It is also most desirable that such sanitary appliances should be kept as much as possible together both on plan and vertically.

I have enumerated some of the points I thought most open to criticism in the Sheffield sketches, but there is no doubt that the design of the elevations especially is of a higher average than that which has distinguished some late competitions, as those of you will see who care to visit Sheffield, where all the designs are now, I believe, on exhibition,* except the six selected for the second and final competition, and those whose authors wished to withdraw them before the exhibition. Wherever the authors are so willing, their name is now attached to their designs, and I trust that the publicity thus given to merit may be some compensation for the absence of other remuneration.

In the case of the six, their sketches are to be hung side by side with their elaborated designs when complete; but in accordance with precedent, for which there is something to be said, they are not to be exhibited until the final competition is over.

I believe that in many a competition the expenses to which our profession is put before any contract drawings are prepared for a building thus competed for would, if accurately calculated, be found to amount to many times the total of the successful competitor's commission. So that, except for the educational benefit to be derived from having designed and elaborated the details of some important building, there is to the body of the candidates very little profit to be gained from a system which most of us deplore, but do not at present see how to supersede.

I must apologise to you if I have occupied your time unworthily or at too great a length on design as applied to competitions. My remarks, I know, have most of them been trite remarks; but I have been addressing students. I must ask those of my hearers who could lecture me on this subject with so much profit to myself to forgive my prolixity, and, as assessors in other competitions, to excuse my having ventured to suggest a way of making them as useful as possible to our profession. I would ask the students also to take my remarks in good part. I hope that what I have said will offend no one, but conduce, in however feeble a way, to the help and encouragement of the earnest student of practical architecture.

Mr. J. Macvicar Anderson: I think, Sir, your address should scarcely be allowed to pass unnoticed. I believe I may venture to say that in some respects we have made progress in the Institute of late years. I do not say made "reforms," because I do not like the word "reform"; but I certainly think we have made improvements, and one of the most conspicuous is in relation to the subject for which we have met together to-night, viz., the students' work and prizes for the year. In place of the designs being submitted in one portion of the year, as formerly, the awards announced in another, and the prizes presented when we had forgotten who the competitors were, as well as their work, we have now so arranged the matter that the whole thing is brought into one focus. We receive the drawings; they are immediately hung; the awards are affixed; and no time is lost in presenting them. A further improvement, I think, has been the institution of the custom of offering a few words of encouragement and counsel to the students from the President on these occasions. I think that not only the younger members of the profession who are present to-night, but those who have had experience in these matters, may take his words of counsel to heart. They are words which come from a man with probably more experience in these matters than is possessed by any other man in the profession. I hope, therefore, you will allow me to move a very hearty vote of thanks to you, Sir, for the excellent counsel which you have embodied in your address this evening.

Mr. Campbell Douglass (Glasgow): I have much pleasure in seconding the very well-timed remarks of Mr. Anderson. I am sure there are many valuable hints to us all contained in the President's excellent address.

* As will be seen from our article in another column, only about half of the designs that were sent in are actually exhibited.—ED.

The motion was then put, and carried by acclamation.

The President then presented the prizes to the successful competitors.

The Institute Silver Medal and 10*l.* 10s. fell to Mr. Alexander Mackintosh; and in the same competition a Medal of Merit was awarded to Mr. J. E Mowlem, of Swanage.

In the Soane Medallion Competition, three Medals of Merit only were awarded this year, viz, to Messrs. F. W. Bedford, C. F. Spooner, and E. W. Gimson (Leicester).

The Tite Prize of 30*l.* and a Certificate fell to Mr. James C. Watt, of Aberdeen.

The Grissell Gold Medal and 10*l.* 10s. were gained by Mr. Walter Percival, of Longton, Staffordshire. Medals of Merit in the same competition were awarded to Messrs. J. A. Pywell and T. F. Pennington (associate).

The Pugin Studentship was awarded to Mr. John Begg, and a Medal of Merit to Mr. D. J. Blow.

The Scientific Masonry Prizes were awarded as follows:— 10*l.* 10s. to Mr. H. A. Woodington, and 5*l.* 5s. to Mr. A. W. Anderson.

The President, in this connexion, regretted that Mr. Arthur Cates, who was interested as one of the donors of these prizes, was unable to be present. The Class, he might say, had set itself to improving one of his own vaults, and he believed it was the opinion of Mr. Harvey that they had done so very successfully. The Class was one which deserved the most hearty support, because those who took the trouble,—for it involved hard work,—of mastering the problems Mr. Harvey set before them, would be more efficient both as assistants and principals.

Mr. Octavius Hansard considered that a debt of gratitude was due to the three gentlemen who had given the Scientific Masonry Prizes. They could scarcely be expected to do so every year, and if twenty men could be found to give a guinea each for so good a purpose, he would be prepared to head the list.

Mr. Macvicar Anderson said he also would be very happy to subscribe.

The Godwin Bursary for 1890 was gained by Mr. A. A. Cox (associate).

The Ashpitel Prize was awarded to Mr. Herbert Baker.

The President, at the close of the presentation, said: I think we must all very much regret that there have been no candidates for the Essay Prize. It is a great pity, and I can only hope that many gentlemen are holding themselves in reserve for another year. I think I ought also to say that Mr. Masey, who has just completed his work in Italy for the Soane Travelling Studentship, had to return home ill before he had quite finished the time he had intended to be there. For the future the Soane Studentship will be held for a shorter length of time than hitherto, which will be of advantage to the students of the future.

The President then intimated that the next meeting would be held on Monday, February 3, when a paper would be read by Mr. J. A. Gotch, on "The Renaissance in Northamptonshire."

EXAMINATION IN ARCHITECTURE:

IN THE PAST, THE PRESENT, AND THE FUTURE.

AT the ordinary fortnightly meeting of the Architectural Association, held in the rooms of the Royal Institute of British Architects on Friday, the 17th inst., Mr. Arthur Cates, Vice-President, R.I.B.A., read the following paper on the Architectural Examinations:—

Mr. President and Gentlemen,—In response to the request of your Committee that I should read a short paper to open a discussion on the Progressive Examinations, I propose to place before you a succinct account of the Examination, from the first steps taken towards its establishment, with some observations on the new programme which is coming into force.

The subject of a diploma for architects having been much discussed in France, there appeared in August and November, 1854, and in March, 1855, in the "Encyclopédie d'Architecture" (vol. iv., pp. 113 and 167; vol. v., p. 33), three articles under the title "Du Diplome d'Architecte." These articles dealt in detail with the education of an architect as it should be, and were brought by me under the notice of members of the Architectural Association, of which I was then secretary.

The propriety of conferring a diploma on architects was the subject of a paper read before

the Association in the summer of 1855 by Mr. J. H. Chamberlain.

In his address, at the opening meeting of the Association for the Session 1855–56, on October 5, 1855, Mr. Alfred Bailey, the President of the year, dealt at considerable length with the intention of the Association to memorialise the Institute on the subject. He urged the necessity for the institution of a public architectural examination, not necessarily compulsory, but

"Let the examination only be a good one and a stiff one, let the 'pluckings' be tolerably numerous, and he was sure that there would be no necessity for a penal law to create candidates."

Mr. William Tite, M.P., who attended as a visitor, spoke at length on the question of scientific education. He considered the great defects were the want of a good, sound, elementary education. and proper examination afterwards by the Institute or some competent body, so as to give the scientific teaching at lectures or in the architect's office a proper direction.

Mr. Tite, further, on November 5, 1855, in his observations at the opening of the Session 1855-56 of the Royal Institute of British Architects, made special reference to Mr. Bailey's Address, and warmly commended the object he had in view, the institution of an examination, and of its necessary result, a diploma.

The three articles above referred to having been reprinted in pamphlet form, a copy was presented by the author, M. Adolphe Lance, through Mr. John W. Papworth, to the Royal Institute of British Architects.

On November 19, 1855, Mr. John W Papworth read before the Institute a Paper, "An Abridgment of M Lance's Essay, entitled, 'On a Diploma in Architecture,' with Remarks and Suggestions"

In the meantime, the Association had prepared and transmitted to the Institute the memorial determined on in October, which was read to the meeting on December 3, 1855, as follows:—

"TO THE PRESIDENT AND COUNCIL OF THE ROYAL INSTITUTE OF BRITISH ARCHITECTS.

The Memorial of the Architectural Association.

MY LORD AND GENTLEMEN,—Your memorialists, representing the younger members of the architectural profession, beg to lay before the Royal Institute of British Architects their desire for the establishment of an examination, which should eventually serve as the basis for the issue of such a diploma as shall certify that the holder thereof is fully qualified to practise as an architect. They have been induced to take this step, from the consideration of the difficulties which, in the present day, beset the early stages of architectural education.

In preparation for entrance upon their articles, in studies during the period of their sojourn in an office, and in the critical interval from the completion of their articles to the moment of commencing practice, the students of architecture are without sufficient guidance. In no case have they that important and valuable direction given to their several studies which is found to be so successful an inducement to the complete mastery of other professions, and this evil produces its more important effects when students of architecture, having completed their articles, commence practice on their own responsibility.

The want of proper knowledge on the part of the architect, combined as it is with a want of information on the part of the public, leads to many of the anomalies which are now so frequently observed in the practice of the profession, and the presence in its ranks of many who have not the power, and in many cases of those who have not the will, to uphold its credit.

So much attention has been lately turned towards the necessity of testing by examination the competency of all candidates for public employment, that your memorialists are led to submit that the present is a highly opportune period for bringing the subject under your consideration. They feel that they are addressing those who represent the architectural profession, and by whom only an authoritative step towards the establishment of an examination, or the granting of a diploma, could be taken. They are also assured that the senior members of the profession could hardly take the initiative till the necessity for that course had been brought before them by those who have more recently tered the profession.

Your memorialists do not feel themselves called upon to enter into further details, because they are convinced that the members of the Institute must, from their position, be fully cognisant of the evil results of the present system; and, therefore, do not doubt that the Council will take an early opportunity of organising an examination, such as shall be found best calculated to aid and direct the student, and to bring the real qualifications of the architect before the public.

ALFRED BAILEY,
President of the Architectural Association."

It seems to me, Gentlemen, that that Memorial might almost have been sent up by us quite recently. Affairs moved slowly; active opposition, and not less formidable veiled hostility, raised obstacles, not the least of which was the idea that the architect being an artist must, like the poet, be born, and therefore could not be made: such a course of education as was shadowed forth by the Memorial was by many deemed not only unnecessary, but actually undesirable; while others thought that the "run of the office" was quite sufficient to provide all the "education" a young architect could require; and it was not until June 25, 1860, that the Institute arrived at the conclusion "that it is desirable to afford an opportunity for a voluntary professional examination"; and at a Special General Meeting held on January 14, 1861, it was resolved—

"That the Council be instructed to proceed with the preparation of a curriculum and by-laws, and be recommended to appoint a Committee to this end, and to report to a General Meeting."

This resulted in the establishment of the Voluntary Architectural Examination, the Programme of Regulations, and Course of Examination, with list of books recommended to candidates, and a sketch of a form of Examination Paper, being issued in May, 1862.

These documents, elaborated in the most careful manner, were widely comprehensive, and so complete, that they have been used effectively in the arrangements for the Examinations now in force.

Mr. Arthur Ashpitel took the most lively interest in the success of the Voluntary Examination. On November 29, 1862, he attended a meeting of the Association, and in an earnest address advocated its adoption; he also, by bequest of certain shares (since added to by other donations), founded in 1872 the "Ashpitel Prize," now annually awarded to the candidate recommended as having most highly distinguished himself in the Examinations held in the current year.

The first Voluntary Examination (Proficiency) was held in January, 1863, and the last in June, 1881.

Within this period of nineteen years twelve examinations were held, at which forty-seven candidates passed the Preliminary Examination, which lapsed in 1879; thirty-seven passed in the Class of Proficiency, four of whom had passed the Preliminary. While of those who had passed the Proficiency Examination, only three passed the Class of Distinction; these I may mention by name as R. R. Bayne, R. Phené Spiers, T. H. Watson—deserving of all honour.

Notwithstanding the great care taken by the promoters of this Examination in the preparation of the admirable programme, it did not satisfy the requirements of the day, and, as it was gradually failing to command any interest in the student class, some effective measure was necessary to meet the needs of the architectural student as expressed in the Memorial of 1855.

This was in some degree attained by a resolution of the Institute passed on March 14, 1877, establishing a new by-law, by which it was provided that

"All gentlemen engaged in the study or practice of civil architecture, before presenting themselves for election as Associates, shall, after May, 1882, be required to pass an examination before their election, according to a standard to be fixed from time to time by the Council."

The regulations and programme governing this qualifying or obligatory Examination were adopted by the Institute on January 3, 1881, and are those now in force for it.

The first of these Qualifying Examinations was held in March, 1882, and since that date fourteen examinations have been held in London, two in Manchester, and one each in Glasgow, Leeds, and Liverpool—nineteen examinations in all. At these examinations, 310 candidates have passed, and twenty-three who have been relegated to their studies are entitled to come up again without further payment.

Thus, in nineteen years (1863-81) the number of candidates passed in the Voluntary Examination Class of Proficiency was only thirty-seven. In eight years (1882-89) the numbers passed in the Obligatory Examination were 310—the candidates who passed in the year 1889 having been seventy-nine, with twenty-three relegated to their studies, to come up at future examinations. The number of candidates who passed in each year is: 1882 twenty-one, 1883 nine, 1884 twenty-one, 1885 seventeen, 1886 thirty-nine, 1887 forty-four, 1888 eighty, 1889 seventy-nine. The steady increase, as the examination has become better known and appreciated, is most satisfactory; and there is good ground for believing that this success will continue.

The system of relegation, by which candidates who, while not failing entirely, have not succeeded in obtaining a sufficient number of marks to pass, are permitted to come up at a future examination, either for the whole, or for that particular section in which they may have failed to satisfy the examiners, has been most successful, and in a remarkable degree so advantageous to the candidates that it will be continued in the Progressive Examinations now established.

Until the "Final" of the Progressive Examinations comes into force, in not less than three years time, the Qualifying Examination as at present conducted will be continued; it is, therefore, desirable that young men in practice, whether in London or the provinces, who ought to appreciate the great advantages to be derived from the preparation for and passing this examination, should in that interval follow the good example of so many similarly situated, who have passed this test satisfactorily, and greatly to their own benefit; it is for young architects of this class that this examination is particularly adapted. The close relationship now being established between the central body in London and the local societies should materially promote the accession of candidates from the provinces, and it cannot be too distinctly understood that the special circumstances of architects who may have been in practice for a few years, and offer themselves for examination, receive the fullest consideration from the Board of Examiners, and thus all ground for hesitation on their part should be removed.

Satisfactory as has been the working of the Qualifying Examination, and well adapted as it is to meet the requirements of young architects between the ages of 23 and 30, the experience gained in the past eight years, much conference with the younger candidates, and careful study of the answers to the questions set, made it evident that in the interests of the student it would be desirable to establish a more elementary examination, which would secure that they were well grounded in the first principles of the subjects to be dealt with before proceeding to more advanced studies.

The first public step in this direction was taken on May 4, 1887, at a meeting of the General Conference of Architects on "Education," when, after the reading and discussion of various Papers tending more or less directly to this end,* the following resolutions were unanimously adopted:—

1. That it is desirable that the guidance and direction of the education of those entering the architectural profession should be undertaken by the Royal Institute of British Architects.

2. That to realise this end the Royal Institute of British Architects should prepare a scheme of a complete system of examination.

3. That such system should comprise:—1st, Preliminary, for pupils entering the profession, as a test of general knowledge—those passing this to be "Probationers R.I.B.A." 2nd, Intermediate, for pupils in their third year of earlier, for the general principles of Art and Construction,—those passing this to be "Students R.I.B.A." 3rd, Final; pass examination to qualify for A.R.I.B.A., at twenty-three years of age or earlier.

For some unexplained reason the proceedings of recent Conferences have not been reported and issued in the *Transactions* or in the *Journal* of the R.I.B.A.; but this meeting appeared to me to be of so much importance that I reprinted from the *Builder* report the papers read, added an appendix containing full details of the French and American systems of education, issued the whole in pamphlet form, sent a copy by post to every member of the R.I.B.A., and distributed a large number among local societies, and in quarters where the subject was likely to arouse interest.

The three resolutions were formally referred to the Council, with a request to take the necessary steps to carry them out, and ultimately to realise this scheme.

The Institute, acting under the authority of the New Charter and By-laws, by resolutions passed April 8, 1889, established a system of Progressive Examinations:—1. Preliminary; 2. Intermediate; 3. Final or Qualifying.

The Preliminary Examination is to test the general knowledge of aspirants entering, or who have just entered, the profession. The first Preliminary was held in November last, and may be considered to have been satisfactory. An analysis of the result shows that out of 107 candidates who were admitted to the examination, 44 were declared exempt, 43 passed, and 23 were relegated to their studies: so that at this first examination 87 candidates have been entered on the Register of Probationers of the Royal Institute.

* These Papers, by Professor Babcock, Cornell University, U.S.A., Mr. E. C. Robins, F.S.A., Sir Philip Magnus, Mr. Arthur Hill, B.E. (Cork), Professor Aitchison, A.R.A., Professor T. Roger Smith, Messrs. R. Phené Spiers, F.S.A., Lawrence Booth (Manchester), and J. Alfred Gotch (Kettering), with the discussion thereon, are printed at length in the *Builder* of May 7, 1887, and merit careful perusal.—A. C.

The programme of subjects included in the examination is very clear; they are all of a simple elementary character, with which any intelligent schoolboy should either be acquainted, or be able with short preparation to make himself acquainted; but some of the candidates appear to have thought it unnecessary to trouble themselves to acquire any accurate knowledge on some of the subjects, and in consequence have been sent back.

Great importance is attached to this preliminary Examination, since when well-established, it will certainly influence the concluding portion of the school education of youths destined to enter the profession, and thus prepare them with a good foundation for their further studies.

The Probationers now registered will in not less than two years,* on submitting satisfactory "Testimonies of Study," as particularised in the programme, be admitted to the Intermediate Examination, the successful passing of which will qualify the student for registration as a Student R.I.B.A.

Not less than two years after having passed the Intermediate, the student—provided that the further "Testimonies of Study" he will be required to produce are satisfactory—will be admitted to the Final Examination, to qualify for candidature as Associate R.I.B.A. Except as regards the "Testimonies of Study," which are of a more complete character than the "Probationary work" now required, this Final Examination will cover very much the same ground as the present Examination in Architecture; but with the preliminary training necessitated by the Intermediate Examination it is anticipated that the results, so far as regards the attainments of the candidates, will be even more satisfactory than at present.

As in the present "Examination in Architecture" special provision is made for, and particular consideration given to, the candidature of architects actually in practice, so in like manner when this Examination in some three or four years' time has become merged in the Final, some adequate provision will for a few years be made to meet the cases of architects in practice, whom it would not be reasonable to require to pass the two previous examinations, and from whom it would be equally unreasonable to require the full Testimonies of Study which the student candidate would produce in the ordinary course of his preparation.

Although it is to be presumed that every one who takes an interest in the subject is fully acquainted with the details of the Programme of the Progressive Examinations, published at length in the *Kalendar of the R.I.B.A.*, or, if not so acquainted, will, by acquiring the *Kalendar*, obtain the necessary information, I will venture to occupy your time, not by a dry recital of particulars there to be ascertained, but with a short comment explanatory of the views with which those details were settled; and, first, I desire to impress on you that these details have been arranged with a desire that the student, in whatever part of the country he may be, should be guided gradually forward in a sound course of study, but should at the same time be left quite free as to the sources from which he may attain the necessary knowledge, and that so far as possible in arranging such a course all baneful academic influences might be avoided, and the natural abilities and proclivities of the student allowed free play, consistent with the acquisition of sound elementary knowledge essential to enable him to practise his profession with advantage to his client and credit to himself. The Memorial of 1855 pointed out that students of architecture were without sufficient guidance at three periods of their career before entering into practice,—viz., "in preparation for entrance upon their articles," "during the period of their sojourn in an office," and "in the critical period from the completion of their articles to the moment of commencing practice." The Progressive Examinations meet these periods exactly, and the subjects which must be included in them are defined in the By-laws, which have been approved by the Privy Council, viz.:—

By-law 2, Examinations, provides that

"The Examination for candidates for Associateship shall be written, graphic, and oral, and shall relate to the history of architecture, the characteristics and details of architectural styles, the nature or properties, and application of building materials, sanitary science, the principles and practice of construction, the design and arrangement of buildings, professional practice, and such other subjects as the Council may from time to time determine."

The Preliminary Examination exacts knowledge of the elementary branches of an English education, and of one language — French, German, Italian, or Latin. Also the special knowledge of geometrical and freehand drawing, elementary perspective, and of elementary mechanics and physics, which should be readily acquired by a youth of about sixteen.

When this Examination is firmly established the managers of educational establishments will certainly take note of its requirements to secure the necessary qualifications in youths intended for the profession.

An important feature of the scheme for both the "Intermediate" and "Final" Examinations is the "Testimonies of Study," which must be submitted by the candidate and be accepted as satisfactory, as a condition precedent for admission to the Examination.

For the "Intermediate" these "Testimonies" consist of drawings—which in the Art section cover the elementary features of Classic and Mediæval architecture, and in the Science section the elements of ordinary construction. These drawings will be used in the oral examination to test the candidate's knowledge of what he has drawn, and thus secure some protection from mere unintelligent, slavish copying.

Concurrently with the production of these "Testimonies," the student will be preparing for the Examination itself by acquiring the necessary knowledge on the subjects set out in the Programme—all of an elementary nature, but essential to be mastered as the sound basis for further study. Among these subjects the application of geometry to actual work, the projection of solids, and development of surfaces, will assume the importance they deserve.

The lines on which this Programme has been founded have been indicated by the deficiencies in elementary knowledge evinced by candidates at the Obligatory Examination. It is, therefore, hoped that students following this course with care will lay a good sound foundation for those more advanced studies required to secure a pass in the Final.

The work thus set out for the aspirant to enable him to pass the Intermediate may appear formidable on paper, but really does not demand any particular exertion from an ordinary student. Continuous and well-directed application by home or class study after office hours will, of course, be essential to attain success; but much of the work, especially the completed "Testimonies" of study and the necessary preliminary work, should be carried out in the office, under the eye and guiding hand of the architect-master who has undertaken to instruct his pupil in the art and mystery of the profession of an architect. Such master will certainly in every case greatly benefit by the improved intelligence of the pupil, and the more advanced knowledge he will bring to bear on the active work of the office, and may, in some instances, be rewarded for the loss of the services of such pupil as an office-help,—spending his days in endless tracing, copying specifications, drawing plans on skins for leases, and the like drudgery, profitable enough to the master, but the merest waste of time for the poor pupil,—by the conviction that he is in some degree fulfilling the obligation he undertook when he accepted the responsibility of taking the future of the pupil into his hands.

The subjects of study exactly follow the lines laid down in the By-law I have quoted, to which, I may say, particular attention was given by the Privy Council, who required the specific subjects to be particularly stated as there set out; but, of course, at this early stage these subjects can only be dealt with in an elementary manner to form the basis of more mature study.

This preparation, the experience gained by passing through this examination, the encouragement and advice the student is certain to receive at the Oral Examination, will induce him to enter on preparation for the Final, not only with a good elementary knowledge, but with an interest in the further prosecution of his studies which will naturally follow the acquisition of such knowledge.

This Final Examination fits in exactly with the third period of the Memorial, since it is neither desired nor expected that a student should offer himself immediately after the expiration of his articles, for although if a candidate who has just completed twenty-one years of age should offer himself and satisfy the conditions, he could not be rejected, it is not desirable that any one less than twenty-three years of age should come up, and the instances in which one of younger age could pass would be few indeed.

The "Testimonies of Study" required for admission to the Final comprise three most important subjects not included in the examination which this will supersede—viz., drawings from some historical building made from actual measurement, with the jointing of the masonry, &c., correctly shown, and the construction—with details ½ full size—the original sketches measured and plotted on the spot being appended, which will ensure that some attention has been given to the monuments of the past; while the satisfactory evidence of having followed the carrying-out of building works, and notes of the progress and conduct of such works which will be required, will provide for attention being given to the practical work which cannot be omitted.

The two sheets of diagrams of constructive masonry,—arches, vaults, or groined vaults, with the projections of the arch and vault stones,—are intended to promote the study of projection and geometry,—now, alas! almost absolutely neglected by the architect, but, when mastered, of the greatest value to him, and these drawings being obligatory, good results may be expected to follow. I may say, added Mr. Cates, parenthetically, that Mr. Lawrence Harvey, in his classes at the City and Guilds' Institute, had several building artisans, but only one young architect,—a fact which is, I think, hardly creditable to this Association.

The other subjects fixed for the "Testimonies of Study" touch on the principal points with which acquaintance is desirable, but the limits are so wide that the fullest opportunity is afforded to the student for the development and display of his particular ability; while the present Qualifying Examination, modified only to meet the more advanced position of the student, may be considered as fairly representing the written, graphic, and oral portions of the Final.

The interest which has been evinced in the Preliminary Examination by leading men in Dublin, Glasgow, Bristol, Leicester, Liverpool, Manchester, Newcastle, Nottingham, Sheffield, and other places, is of good augury for the future, especially as many of the candidates have been sent up by architects who are not as yet members of the Institute. Thus it may be hoped that by the aid of such centres, which year by year will certainly be extended, the pupil even in remote country places may be reached, and the whole of the rising students throughout the United Kingdom, and, hereafter, also in the Colonies and Dependencies of this Empire, be brought under the influence of these Progressive Examinations.

The first step towards this is that every architect, whether or not a member of the Institute, should appreciate that it is an obligation on him to see that his pupils are duly prepared for and successfully passed through the full course; and should further feel that in failing to do this he fails to fulfil the obligation he undertook when accepting the pupil; for I sincerely trust that such wicked waste of a youth's best years as giving him, in exchange for handsome money consideration, "the run of the office," will soon come to an end.

This Association can greatly help in forwarding the success of the undertaking, not only by its classes,—so advantageous to those to whom by good fortune they are accessible,—but also by the personal influence of individual members, so many of whom have passed one or other of former examinations.

Further, the Architectural Association of London has effected so much good for the young student by its system of classes, that so excellent a model might well be followed by the pupils and clerks engaged in provincial offices, who should, in every town where a sufficient number could be brought together, form an Association on lines similar to this, and, with the programme of the Progressive Examinations before them, work together and mutually assist in acquiring and maturing the necessary knowledge. I cannot but think that this Association might do good service for architectural students in the provinces could the executive take some measures to promote these local Associations—to work in conjunction with it; and this may now be the more readily initiated since in many

* In compliance with representations made by some of the Probationers, the Council have decided that, should not less than six Probationers offer sufficient testimonies of study, and have duly advanced in their studies, they may, by special exemption, be admitted to an Intermediate Examination, which will then be held for that purpose in November, 1890.

important centres there are in alliance with the Institute professional societies under whose guidance such junior Associations might be established, and whose effective assistance might be obtained by the originating idea being duly communicated to them through this Association.

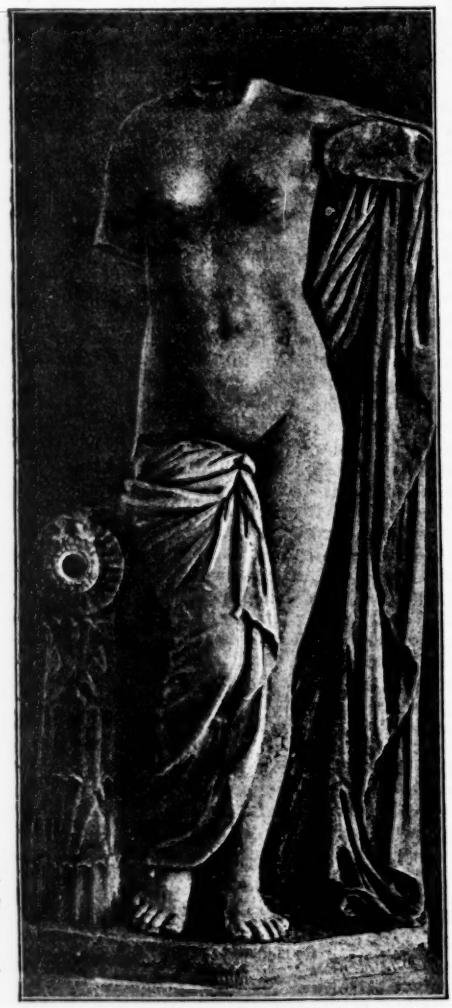
In other towns, where such societies do not as yet exist, the young architects, students, and assistants may with great advantage combine to promote by mutual instruction the study of subjects included in the programme; it should surely need but the first suggestion, and the guidance which the experience of this Association would enable your executive to give, to lead to such associations being formed wherever a dozen, or even fewer, students could be brought together to work in harmony for one common end.

I earnestly commend this to the favourable consideration of your committee, and hope that effective steps will be taken for its realisation, being convinced that it is only by such combination, commencing with the first years of pupilage, and with a clear and definite programme of the *minimum* amount of knowledge which will be required being placed at once before the youthful aspirant, that the future of the profession can be influenced in the manner which we all desire, to the advantage equally of all its members and of the public, its clients.

[The discussion which followed was a very important one, and as it extends to great length, we hold it over until next week, as we desire to give an adequate report of it.]

STATUE FOUND ON THE SITE OF NERO'S VILLA.

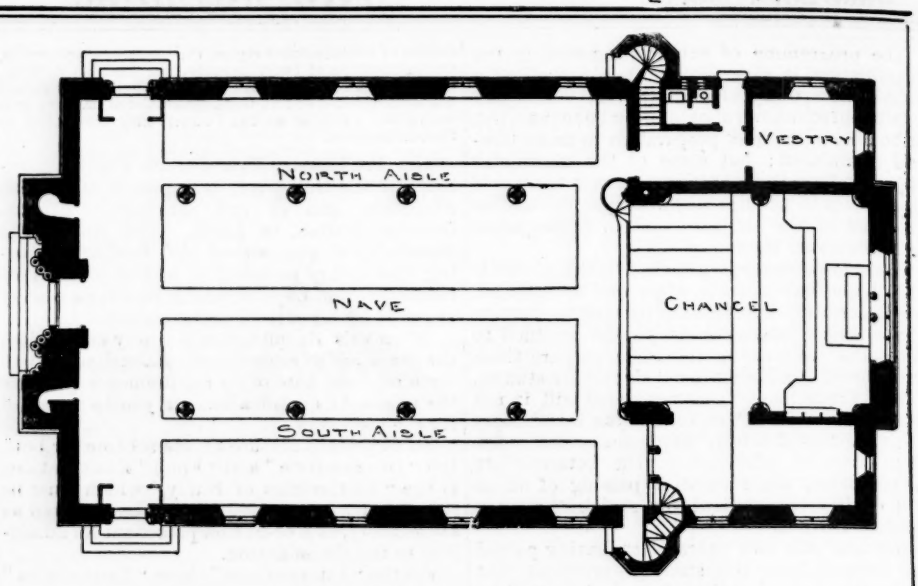
THIS is an illustration, reproduced from a photograph, of the statue found on the site of



Statue found on the site of the Villa of Nero, ancient Antium.

Nero's villa, at what was the ancient city of Antium, as mentioned in a "Note," page 6, *ante*.

The London Sewage Question.—We are again obliged to hold over a report of the discussion on Sir Robert Rawlinson's paper at the Society of Arts.



Church of St. Paul, Grangetown, Cardiff.—Plan.

Illustrations.

LADY CHAPEL, NEW (R.C.) CHURCH, FOLKESTONE.

THIS illustration shows part of the new R.C. church in Guildhall-street, Folkestone, as originally designed by Mr. Leonard Stokes. The church, as executed, was illustrated in the *Builder* for June 1, by view and plan. The original drawing was exhibited in the Royal Academy of 1888.

CHURCH OF ST. PAUL, GRANGETOWN, CARDIFF.

THE Church of St. Paul, Grangetown, is being built by Lord Windsor to provide for the wants of a poor and rapidly-growing district of Cardiff. When finished it will accommodate 600 people, and will consist of a nave and aisles, with chancel, side-chapel, and vestries, with organ-loft above the chapel, and a second vestry above that shown on the ground-plan. The materials used are, for the external walling, a local limestone, in courses averaging about 2½ in.; the dressings of the doors and windows are of Penkridge stone; and the quoins and other plainer dressings are of Portland cement concrete cast in moulds. Internally the dressings are of the same materials, and the walls between them are plastered, and will eventually be decorated in colour. The roof is of red deal, and will also be decorated in colour. Externally it is covered with red Broseley tiles. The architects are Messrs. John P. Seddon and J. Coates Carter, of Westminster and Cardiff, and the illustration is from Mr. Carter's drawing.

"SANDGATE," SUSSEX.

THIS house occupies a fine site just within the South Down range, between Pulborough and Steyning. Originally of modest proportions, it was considerably extended some twenty years or so ago, under Mr. Wm. Milford Teulon, architect, when it assumed the form indicated in the small outline, "View previously." The building has now been completed by the present owner, as our illustration shows. A new dining-room and servery have enabled the dinner route to be diverted from crossing the entrance, and at the same time shortened by half; whilst a reconstruction of the entrance itself has afforded means of obtaining a gentlemen's cloak-room in connexion with it and with the billiard-room. Externally, on the south front, the new dining-room wing has been made to balance with the previously-existing drawing-room wing—a new parapet between the two being introduced with the object of binding the whole façade into one composition.

The conservatory was shifted bodily into its new position without breakage of glass.

The contractors for the work that has been done are Messrs. A. Bush & Sons, and the architect is Mr. Walter Millard. The drawing from which our illustration is reproduced was exhibited last year in the Architectural Room of the Royal Academy.

DESIGN FOR PUBLIC BATHS.

WE publish this design under peculiar circumstances. The author, Mr. Peter Anderson, prepared it in competition for the Royal Academy Gold Medal and Travelling Studentship in Architecture, which, our readers may remember, was not awarded on the last occasion, at the close of last year, as none of the designs sent in were considered equal to the occasion. Mr. Anderson's design, which is better than any of those that were accepted and exhibited, was ruled out on account of the author having missed, as we understand it, one out of the series of lectures which the students are required to attend in order to qualify for the competitions. Mr. Anderson states that he inquired at the office of the Royal Academy as to whether he had fulfilled all the required routine, and was told that he had; but on sending in his design it was refused on the ground that one lecture attendance was wanting in his list. As it does not appear that there was any desire on the part of the candidate to evade his duties, and that it was a mistake, it appears to us that Mr. Anderson has been hardly used in being denied a competition which he would probably have won, on a mere ground of "red tape"; and we are therefore glad to show our sympathy for his disappointment in a practical manner by publishing a design which, as a student's work, is certainly of considerable merit.

The author says:—

"In designing a large building of this description, one of the principal objects is to have each portion of it separate, and, as far as practicable, complete in itself, and all parts of easy access from the central hall or vestibule.

The large swimming-bath in centre is entered by a passageway, 10 ft. high, and, besides the dressing-boxes shown, has thirty-two similar boxes on balcony. The bath itself is formed of concrete, from 2 ft. to 3 ft. 6 in. thick, faced with tiles, and open all round for the free passage of fresh air. The bath is entirely lit from the roof.

The gymnasium is separated from the swimming-bath by a glazed screen, and which would be thrown open during any displays. A gymnasts' room, fitted up with clothes-boxes, and having w.c.'s and urinal, is under the tepidarium of Turkish-bath. The instructor's-room is under circular end of laundry. The gymnasium is lit entirely from the roof. The Turkish-bath is on the left of entrance-hall, the furnace-room for it being under the two end hot-rooms. A filter for the swimming-baths is placed here. A passage from this room along end of swimming-bath goes to laundry and boiler-house on opposite side.

The laundry is lit principally from the roof. The ladies' private and swimming baths are on the right of entrance hall, and although an exit is shown on this side from gymnasium, if it were not used, this part could be kept entirely separate for ladies.

The gentlemen's private baths, 1st class (9), 2nd class (12), 3rd class (24), are on the floor over, extending along the entire side to boiler house.

There is a stair and lift from laundry to this floor. The hot-water cisterns are placed high up in the boiler-house. The central portion of front elevation on first floor contains a lecture-hall (seating 370) with raised side galleries, and under these lavatories, &c., for ladies and gentlemen. There is a lecturer's-room at side. Over the Turkish bath, as far as the tepidarium, there is a library and

A. Perkins. delt 1884 — Old Houses in the Market, Warwick.

reading-room (with separate entrances), with librarian and attendants'-rooms. Over the tepidarium are the residences of the caretaker and fireman, these having an entrance from the street. With the exception of these residences the building would be entirely heated by steam."

One remark we may make on the plan, that it is a mistake, in planning public baths, to make the men's and women's entrance from the street by the same door and into the same entrance-hall. It is a mistake that has been made in other plans for baths, executed and unexecuted, that have come before us. The women's entrance should always be a separate one from the street.

OLD HOUSES, WARWICK.

THIS illustration of a picturesque and rather rich example of ancient English half-timbered houses is reproduced from a sketch by Mr. A. A. Perkins. The contrasting effect of the oblique strutting with the rectangular work, in the second story, is unusual and effective.

RECENT DOCK EXTENSIONS AT LIVERPOOL:

THE INSTITUTION OF CIVIL ENGINEERS.

AT the seventh ordinary meeting of the session, held on Tuesday evening, Jan. 14, the President, Sir John Coode, K.C.M.G., being in the chair, the paper read was on "Recent Dock Extensions at Liverpool, with a general description of the Mersey Dock Estate, the Port of Liverpool, and the River Mersey," by Mr. George Fosbery Lyster, M. Inst. C.E

The description of the dock extensions, which were more particularly the subject of this paper, was prefaced by some general remarks on the physical characteristics of the River Mersey and the trade of the Port of Liverpool. The geographical position of Liverpool, its unrivalled water frontage, and its proximity to the great manufacturing districts and to the coal and mineral fields of the North of England and Wales, could not fail to ensure its becoming a great port; and the result was seen in its continuous advance from the condition of a fishing village to that of one of the foremost seaports of the world. Its revenue at the beginning of this century, 23,380*l.* on 450,060 tons, had increased, in 1889, to 990,000*l.*, from dues on 9,292,000 tons. The Mersey estuary was of peculiar form, roughly resembling a bottle, the wide upper estuary from Runcorn to Liverpool forming the body, and the six miles of narrows between Liverpool and Birkenhead the neck. The maintenance of the full capacity of the upper estuary was of vital importance to the port, and in this work the incessant changing of the low-water channel of the upper estuary was one of the prime factors. It was computed that on a spring-tide about 710,000 000 cubic yards, and on a neap-tide about 281,000,000 cubic yards, of water passed in and out at the mouth of the river at New Brighton. The ebb and flow of these vast quantities of water maintained channels through the wide sand-banks of Liverpool Bay. The principal channel was an excellent one as regarded width and direction; and as regarded depth, there was twice every twenty-four hours sufficient for the largest vessels, there being 10 ft. of water on the bar at dead low-water of spring-tides, giving 40 ft. at high-water springs, and 30 ft. at high-water neaps. Time was, however, now a most important element of successful trading, and the tendency was to increase the size of ships, so that a greater depth of water in the approaches to the Mersey was highly desirable in order to avoid delay off the port. The attainment of such an end was, however, surrounded with physical and financial difficulties of no ordinary character; but the question was kept prominently in view, and the Mersey Docks and Harbour Board had recently decided to spend a certain amount of money on an experimental dredging of the bar by sand-pumps. The first Liverpool Dock, the "Old Dock," was constructed under powers obtained in the reign of Queen Anne, in 1708. The site was part of the old pool, a tidal creek on the right bank of the Mersey. This dock was the first wet-dock constructed in England, its area was four acres, and it had within it, on lowest neap-tides, 10 ft. depth of water. Since the construction of the "Old Dock," others had been built from time to time as trade required, the site chosen for them being the river foreshore in front of the town of Liverpool. In the second quarter of this century especially, many new docks were constructed by Mr. Jesse Hartley, dock engineer, to whose ability and practical knowledge Liverpool undoubtedly owed much of its commercial greatness. From 1845, also, Birkenhead, on the Cheshire or left bank of the Mersey, entered into competition with Liverpool. Docks on a very large scale had been laid out there, and already partly constructed, when, in 1858, the Mersey Docks and Harbour Board was incorporated by Act of Parliament to take over and manage as one concern the whole of the Liverpool and Birkenhead Docks, which, since the date named, had formed one estate. In 1871, although the Birkenhead Dock system had been for some time completed according to the Parliamentary plans, the Dock Board was urged to consider the desirability of commencing, without delay, further dock extensions on the Liverpool side of the river, on such a scale as would meet the pressing wants of trade, and provide for the growing requirements of shipping, which was everywhere advancing in size and tonnage. The result of this pressure was an exhaustive inquiry into the question by a Committee of the Board, with the outcome that the author was directed to consider and report as to the alterations and additions which might be requisite to meet the probable requirements of the great and increasing commerce of the port. Reports and plans were duly submitted by the author, showing schemes of dock extension both at the north and the south ends of the Board's Liverpool estate; and in the Session of 1873 Parliamentary powers were obtained for the construction of new dock works, estimated to cost on the whole 4,100,000*l.* The works referred to were designed to meet the wants of the port for some time in advance from the date of the Act. It was, therefore, provided that the expenditure was not to exceed 500,000*l.* per annum, and, accord-

ingly, the works had been spread over many years. The effect had been that, before any of the several new docks were opened, trade in its natural advance had been ready to fill them. The general design of the New North Docks comprised the enlargement of the Canada Basin, and the improvement of its entrance, so as to make it available for vessels of the largest class, and the construction of the following new docks:—The Langton Dock, of 18 acres, serving as a half-tide dock; the Alexandra Dock and branches, 44 acres; and the Hornby Dock, 17 acres. The Canada Basin and Langton entrances had been designed to give as direct a lead from the river as possible, so that vessels could pass quickly through, allowing of a large number docking on one tide. They had been found to work excellently; large steamers of 34,197 tons aggregate burden had been docked and undocked in one tide of two and one-third hours. A most important point in connexion with the Canada Basin and approaches was that of depth. After careful consideration, it was decided to lay the sills of the entrances at the level of 12 ft. below Old Dock Sill, or 2 ft. below low-water of equinoctial spring-tides, and the floor of the basin and approaches at a level 2 ft. lower. In order to ensure the maintenance of the required depth without dredging, special means had to be adopted to clear away the silt deposited every tide; and to this end sluicing-culverts had been constructed in all the walls of the basin, the flow of water from which cleared silt away for a considerable distance in front of the walls. To effect the removal of silt deposited beyond the range of the wall-sluices, sluice-pipes had also been laid under the floor of the basin; and these were fitted at short intervals with vertical branches having outlets through the floor of the basin. The outlets were closed by framed disks of greenheart, which effected the distribution of the sluicing water over the area to be cleared. The fairway to the basin was also maintained clear by sluices laid in the foundations of the north and south jetties, which, besides serving for this purpose, limited the area within which deep water had to be maintained, and acted as guides against which vessels entering or leaving the basin might bear. The Langton Dock had an area of 18 acres, and served as a vestibule for shipping, while its north and west quays were provided with sheds suitable for the discharge of vessels of the largest class. The graving-docks, situate on the east side of the Langton Dock, were each 950 ft. in length, but had intermediate gates in the centre, so that the inner chambers could be used as "long-time," while the outer were used as "short-time" docks. The graving-docks were built entirely of concrete. A 30-ton hydraulic crane furnished means of handling screws, rudders, &c., and was so arranged as to be capable of being used at any of the four graving-dock chambers. At the entrance to the graving-docks was an engine-house, which was the centre of power for the district; it contained hydraulic main-engines of 350 h.p., besides powerful engines and pumps for draining the graving-docks of such water as could not be run off with the tide. On the south quay of the Langton Branch Dock was a hydraulic crane of 100 tons power, of a novel character, the lift being made by a direct-acting inverted hydraulic cylinder,—a mode of working which permitted of nice adjustment of the loads. The Alexandra Dock, designed to accommodate the largest steamers, had a length of 1,600 ft., and its quays were all provided with substantial sheds, 95 ft. wide in one span. The Hornby Dock was partly used as a timber dock, partly for ordinary trade; for the latter purpose a shed, 125 ft. wide, was now in course of erection on its south quay. The principal points of these northern docks were illuminated at night by electric lights, placed on masts 90 ft. high. The total estimated cost of the whole of the works was 2,727,000*l.*, and, since their completion, they had accommodated sea-going ships of the largest class, with an aggregate of 18,000,000 tons. The New Southern Extension comprised a chain of docks from the Herculaneum, which had been constructed by the author in 1868, to the old Brunswick Dock. These new docks had been named the Harrington, Toxteth, and Union, the latter forming the link between the new system and the old. At the same time the Herculaneum had been greatly enlarged, and on its eastern and southern quays special accommodation for petroleum had been provided by the excavation of casemates in the solid rock. The Harrington and Toxteth Docks were laid out for general trade, and were provided with first-class sheds, those on the western quays being single-story sheds, 150 ft. wide, whilst on the east side double-storey sheds of novel character had been erected, the width of these sheds being 95 ft. The discharge of goods on to the floors of the latter sheds was effected by a number of hydraulic cranes, mounted on the roof, and capable of dealing with any load up to 30 cwt. Through the Union Dock, vessels which could not on neap-tides, by reason of their deep draught, get into the river over the Pluckington Bank and shallow sills of the older docks, were enabled to dock and undock through the chain of new docks into the river, by the Herculaneum entrances, now deepened to 12 ft. below Old Dock Sill. The level of the water in the older docks referred to would be maintained, when necessary, by impounding and pumping. The bulk of the excavation from these docks was a soft sandstone rock, and, no place of deposit being obtainable, it became necessary to send the rubbish to sea, which was done in steam-hopper barges of 500 tons capacity. The estimated cost of the New South Docks was 1,373,000*l.* By the north and south extensions, forming the subject of the paper, the area of the Liverpool Docks had been increased from 252 acres,—the area at the time of the passing of the Act of 1873,—to 363 acres, the present area, and the quayage from 18 miles to 24 miles.

THE LONDON COUNTY COUNCIL.

THE usual weekly meeting of the London County Council was held on Tuesday last at Guildhall, Lord Rosebery in the chair.

Proposed New Council Chamber.—Sir T. H. Farrer moved:—

"That it be an instruction to the Council Chamber and Offices Committee to consider and report as to acquiring a suitable site for a Council Chamber and offices."

In the course of a long speech he advanced the reasons he had for making his motion. Although, he said, the enlarged Council-room at Spring-gardens would, when completed, be large enough for their meetings, the office accommodation there was most inadequate, and was so overcrowded that their work and the health of their clerks were seriously suffering.

Mr. Acworth formally moved the following amendment, which stood in the name of Mr. Rhodes:—

"To omit all words after 'That,' in order to insert the words 'having regard to financial and other general considerations, and having regard to the inexpediency of any proceedings in the nature of a possible hindrance to the ultimate fusing of the ancient Municipality of the City of London and the newly-formed Council of the Administrative County of London in one great corporation, it is not desirable at present to press on the seeking for a site for new Council offices."

Mr. Acworth said that he agreed with almost every word that Sir Thomas Farrer had said, and there was a good deal in Mr. Rhodes's motion with which he did not agree entirely; but he did not think that the fusion with the City need be seriously considered in reference to this matter. Subsequently Mr. Acworth withdrew this amendment in favour of that which stood in the name of Sir Walter de Souza.

Sir W. De Souza moved:—

"That the Council, whilst recognising that in due course a site will have to be acquired, and municipal buildings erected suitable for all the requirements of the Council, feels that it is not in a position to judge what the future requirements of the Council will be, and for this and other reasons is of opinion that it is at present premature to consider any scheme for the purchase of a site and the erection of municipal buildings."

This amendment was lost, on a division, by fifty votes against thirty-nine votes, and the further discussion of the subject was postponed.

The Architect's Department.—Arising out of some recommendations of the Standing Committee as to the appointment of some temporary draughtsmen and assistants in this department, it was incidentally stated that the Standing Committee would shortly present a report dealing with the whole organisation of the department.

After transacting further business the Council adjourned.

Houses of Parliament, Berlin.—On the 13th inst. the "Controlling Committee" at last (after discussing the subject for nearly two years) sanctioned the erection of a large central cupola, according to the designs of the architect of the building, Herr Wallot.

THE GUINNESS FUND.

SIR,—The princely donation of Sir Edward Guinness being the first step towards the attempt to solve the difficult and embarrassing problem as to the practical way of properly housing the poor will doubtless cause the matter to be taken up in earnest. With this view I venture to repeat a suggestion I made when Mr. George Peabody announced his intention of devoting a large sum of money for a like purpose,—viz., that instead of a body of trustees attempting themselves to erect dwellings, they should offer to lend a considerable portion of the money required at a low rate of interest,—the interest of which and the principal to be repaid in equal quarterly instalments extending over say thirty years or redeemable at pleasure. The advantages would be that the difference between the amount lent and that required would encourage private investment and increase the available fund, which would be further increased by donations, or if necessary by public grants. The low rate of interest would give a margin that would just turn the scale from a loss to a profit. The lenders would have control not only in the planning and construction of the buildings, but also in their ultimate use (at any rate for thirty years), so that their purpose may not be lost. Each year would render the security greater, and by the constant repayment the fund would be practically inexhaustible. If some such plan as this had been adopted by the Peabody trustees, I believe the difficult question would by this time have been nearly settled.

J. DOUGLASS MATHEWS.

HAYWARD (DISTRICT SURVEYOR) *v.* SANDON.

SIR,—In some remarks as regards this matter which you published on the 11th inst., I wish to point out some misleading statements which I beg you to correct.

It is stated that the "summons was dismissed," yet that could scarcely be, as no summons has issued but the one heard on Oct. 4, 1889, when the magistrate decided in favour of the District Surveyor, giving him also costs in the case.

Also it is stated that my "solicitor" gave me certain advice, which he actually did not give. But why anyone should write to you professing to know and publish what passed between "my solicitor" and myself I am at a loss to conceive, though in justice to Messrs. Sandon's adviser, I should say that I am led to believe this statement did not emanate from him.

What actually happened was this. Messrs. Sandon being dissatisfied with the magistrate's decision, and the order that he made on Oct. 4 that they should pay the District Surveyor the specified fees, endeavoured to get a case stated for the Superior Courts.

Failing to obtain this in their own way, it was discussed in the magistrate's own private room and "dismissed"—if that is the word—and so the matter remained in *statu quo*.

As I made no demand for costs, of course, none were given.

Since then the matter has been settled by Messrs. Sandon paying me what I have chosen to accept in satisfaction of my fees. But be it quite understood that the decision of the Bow-street Court confirming that of all other Courts in favour of the District Surveyor's contention is unshaken, and that Clause XXVII. of the Act remains to be read as it always has been, and Messrs. Sandon's contention has only confirmed its meaning to be just what it says in its several rules.

C. F. HAYWARD.

SCHOOL-PLANNING.

SIR,—The writer of the article on p. 4, *ante*, recommends asphalte for school floors. I have, however, frequently heard complaints from men employed in City warehouses of the asphalte floors upon which they have to stand all day; they attribute to its effects the shortening of the lives of their fellow-workmen. Employés who have to stand continually on linoleum or oilcloth also complain that these floor-coverings "draw their feet." It has been suggested that asphalte and these coverings are good conductors of heat, and are the means of a too rapid loss of heat; another notion is that the interposition of these substances causes an interference with the normal electric condition of the body. What are the electrical conductive conditions of these substances I do not know, but it would be useful to your readers if some of your scientific subscribers would kindly give us some information on the matter.

A. H.

DADLINGTON CHURCH, LEICESTERSHIRE.

SIR,—In Vol. I. of the *Builder*, July 8, 1843, there appears an engraving of this old church, with its quaint, square wood belfry, covered with oak shingle.

Archæologists, and everyone who takes a delight

and pride in our village churches, will learn with mingled feelings of disgust, shame, and regret that this unique old belfry has disappeared, and in its place a fourth-rate, fancy-tiled, villa-turret type of thing put up. The curious old windows, which did duty for a clearstory, have been ruthlessly bricked-up with red bricks, and other vagaries are contemplated with the old wood porch and its fine old door, "if the funds hold out." Surely, some steps can be taken to stop the destroyer's hand. I understand no architect has been called in, but, from a personal inspection of this old belfry in August last, I do not hesitate to say that, with judicious repair at a comparatively small outlay, it would have done duty for centuries.

The chancel was faithfully repaired and partly re-built two or three years since under Mr. Ewan Christian, the architect to the Ecclesiastical Commissioners. H.

PROVINCIAL NEWS.

Smethwick.—A number of residences are about being commenced at Smethwick, Bloxwich (near Walsall), and near Solihull (Birmingham). These houses will be of a size and character adapted to the requirements of clerks and the higher class of skilled artisans. The total cost of erection is estimated at about 26,000*l.* The architect is Mr. John Statham Davis, Birmingham.

Swansea.—The Alexandra-arcade, Swansea, has now been completed. According to the *Western Mail*, the architect is Mr. E. Bath, of Swansea, and the builder Mr. Henry Billings, Swansea. The arcade contains twenty-seven shops, and is furnished throughout with a complete installation of electric light. Its principal novelty, however (amongst South Wales arcades), is the principle which has been adopted of building a second row of shops above the first, and giving access to the upper row by galleries or balconies, which lead all along the building. The public go up flights of massive stone steps at either end, and pass along a fairly broad pavement in front of all the shops. The arcade is traversed by bridges at either end and at the centre, and the public can thus pass freely to all parts. The arcade leads from High-street to Alexandra-road. The latter thoroughfare is at present showing some signs of advancement, and it is hoped that it will in time become as important a thoroughfare as High-street itself.

Walsall.—A new hall for the Walsall Spiritualistic Society is now in course of erection. The hall will consist of basement and three storeys, the top one being devoted to the caretaker's rooms and the basement to the cooking kitchens and other offices. The principal part of the building will be two halls of 36 ft. by 54 ft. each, with ante-rooms and lavatories, the height of the building being 34 ft. to the wall-plate. The building will be almost entirely of brick, with Corinthian columns and elaborate cornices. Mr. W. E. Jackson, Walsall Wood, is the architect, and Mr. R Evans, Thorpe-road, is the builder. The contract for the building is 1,000*l.*, and the total cost is expected to be about 1,200*l.*

CHURCH BUILDING NEWS.

Alnwick.—An organ-chamber has been added on the north side of the ancient parish church of St. Michael, at Alnwick, opening out of the chancel under a Perpendicular arch made to correspond with the character of the chancel. The ancient window formerly in the wall, at the point now occupied by this arch, was carefully taken down, marked stone by stone, and erected precisely as before in the north wall of the new chamber. Mr. F. R. Wilson is the architect. A new organ, estimated to cost 630*l.*, is to be placed in it when the necessary funds are gathered together. The Duke of Northumberland has generously contributed upwards of three hundred guineas towards the expenses of the improvements. The ancient fabric here and there shows traces of the munificence of the ancient Percies in features bearing their heraldic insignia. It is, perhaps, still better known among antiquarians as possessing one of the rare beacon turrets, from which intelligence was flashed, by means of a beacon flare, to distant parts.

Liskeard.—The parish church of Liskeard has lately been reopened, after the completion of its restoration. According to the *Western Morning News*, the work of restoring the church has been done, during a long series of years, in a somewhat fragmentary manner, but about ten or eleven years ago an important contribution to this work was made, nearly 4,000*l.* being then spent in the erection of a new roof, the removal of the organ-gallery, the rebuilding of the north-east angle of the north aisle, and the provision of new mullions and tracery heads to some of the windows. The contract was entrusted to Mr. Thomas Lang, and the church was reopened on March 12, 1879. The committee at that time, although desirous of completing the restoration of the chancel, deemed it advisable to postpone further operations. Ten years having elapsed, an effort was made which has resulted in seeing the desired alterations and improvements carried out. The first stage of the work of the present restoration, which has been carried out from designs by, and under the superintendence of, Mr. John Sansom, architect, of Liskeard, was the demolition of the old and dilapidated vestry, and rebuilding on the same site a structure in the fifteenth century style, to harmonise with the church, the windows, doorways, and other dressings being of granite, interior fittings of oak, and tiled floor. This vestry is a memorial to the late Rev. James F. Todd, a former vicar, and carries out the desire entertained for its erection by his successor, the Rev. Flavel Cook. Mr. T. E. Madams, of Liskeard, was the builder. The old chancel, which measures 40 ft. long and 21 ft. 6 in. wide, and has now undergone restoration, was very badly arranged, and there was no apparent distinction between it and the other portion of the church. The view of the east-end was, moreover, obstructed by the position of the pulpit, which stood on the south side of the nave aisle, near it being the old high pews of the Corporation, whilst on the north side of the nave aisle was a high reading-desk, the clerk's desk, and churchwarden's pew. These obstructions have now been removed, and a passage carried across the east end of the nave. The old oak pulpit, which is a fine specimen of carving, and bears date "Anno Domini, 1636," has been refixed on a moulded granite base much lower than it previously stood, and is approached from the chancel by four granite steps corresponding with its base; it is somewhat further south than formerly. The chancel has been entirely rearranged, the floor raised one step above the nave, and the new choir stalls, erected in teak, are of handsome design and elaborately carved, while the poppy heads are worthy of special mention. The two steps leading from the chancel to the sacrarium are of polished red Ogwell marble, and supplied by Messrs. Blackler & Son, Torquay. The altar railing, which is of solid brass, polished and burnished, with moulded top rail of oak, was manufactured by Messrs. Hart, Son, Peard, & Co., London. The floors of the entire chancel are paved with rich encaustic Minton tiles of special design. The east wall of the chancel has been taken down and rebuilt, and a new granite five-light window and tracery lights has been filled with stained glass by Messrs. Clayton & Bell, Regent-street, London, illustrative of the Ascension of our Lord. Underneath this window stands the reredos, in Beer stone. It has three main panels divided by pinnacles and buttresses, the centre panel by a crocketed canopy. The two panels on each side of the reredos are similar in character to the centre. The whole is rich in carving and tracery. The Communion and credence tables, which have been made in Jerusalem of oak from Mount Hebron and olive-wood from Gethsemane, were designed by the architect. The table has an elaborate traceried front, and the sedilia is in teak of similar character and design to the choir stalls. The east window of the north chancel aisle has also had a new granite five-light window; this has been filled with stained glass by Messrs. A. Savill & Co., of London, and is erected to the memory of the late Mr. Christopher Childs by his widow and four sons, Mr. Borlase Childs, Dr. Childs, Mr. Walter Childs, and Mr. John F. Childs, and illustrates the text, "Consider the lilies of the field." In the north and south chancel aisles the seats have been rearranged so as to afford passages behind the choir stalls, and the Corporation pews are placed in front of the nave seats, the bench ends being carved with the borough arms, poppy heads, and tracery panels, the seat for the Mayor being placed in the centre of the first pew. The heating apparatus has been rearranged by Messrs Longbotham, of Leeds. The wrought-iron reading-desk placed in the nave is the work of Mr. John Davey, of Liskeard. The work generally has been carried out by Mr. Philip Blowey, contractor, of Plymouth, and has been to the satisfaction of the architect and committee, whilst the carving, both in wood and stone, has been executed by Mr. Harry Hems, of Exeter. The granite work was supplied by Messrs. Nicholls & Son, Liskeard. The amount expended has been about 1,800*l.*

Perth.—It has been decided to restore the ancient kirk of St. John, Perth.

Wimbish (*Essex*).—We learn from the *Essex County Chronicle* that it is proposed to complete the restoration of this church by "the rebuilding of the tower," and the carrying out of other works, at an estimated cost of 1,300*l.* Mr. Nelson Jones is named as the architect. The ancient tower, it appears, fell down about 130 years ago. The chancel was rebuilt in 1872.

STAINED GLASS.

Cardiff.—A stained-glass window, for St. John's Church, Cardiff, is on view at Messrs. Belham & Co.'s studio in Buckingham Palace-road. It is in three lights, and illustrates the subject of Christ blessing little children, the figure of Christ occupying the centre compartment, with groups on either side compartment composed in relation to the centre one. The design of the figures is good, and Messrs. Belham's peculiar thick rough glass makes the most of the colour effect. The window has been carried out by Messrs. Belham & Co. from a design by Mr. J. P. Seddon.

Charlestown (*Cornwall*).—According to the *Western Morning News*, a stained-glass window, from the studio of Messrs. Fouracre & Watson, has just been placed in St. Paul's Church, Charlestown, in memory of William Vawdrey, the eldest son of the late Dr. Vawdrey, of St. Austell. The subject is a figure of Solomon, King of Israel, holding a model of the Temple at Jerusalem in his hand. The inscription states that William Vawdrey died at Shanghai in 1883.

Kenilworth.—In the south transept of St. Nicholas Church, Kenilworth, a memorial window has just been placed. The window is of two openings, which are filled with the subject, carried over both lights, of "Our Lord's Charge to St. Peter," with ornamental canopy. Under the window a brass-plate is fixed with inscription. The work has been designed and executed by Messrs. F. Holt & Co., Warwick.

Little Burstead (*Essex*).—The east window of the parish church of Little Burstead has lately been filled with stained glass, the gift of Mr. John Ismay French. According to the *Essex County Chronicle*, the window is the work of Messrs. Clayton & Bell, and it consists of three lights, containing the following subjects, under canopies:—In the northern light, the Annunciation; in the southern light, the Presentation; and in the central light, the Crucifixion. In the tracery above are angels with inscribed scrolls. The work is treated in the richest manner, and has been carried out strictly in accordance with the characteristics of the fourteenth-century period.

London.—St. Clement's Church, Eastcheap, has lately received an addition to its stained glass, in its east window, from the studio of Mr. Taylor, of Berners-street, the subject being the "Agnus Dei," carried out in Renaissance style under the direction of Mr. Butterfield, the architect, who has just completed the redecoration of the church.

Surveyorship, West Hartlepool.—At the last meeting of the Town Council, the salary of the Borough Engineer, Mr. J. W. Brown, Assoc.M.Inst.C.E., F.G.S., was, by a large majority, increased from 400*l.* to 500*l.* per annum. Mr. Brown was eulogised on the efficient and able way in which his department is conducted, and on the skilful manner in which he had designed and carried out the engineering work of the Corporation. Many extensive schemes are in hand and in contemplation in this rapidly developing port.

Advance in the Price of Bricks.—A well-attended meeting of brickmasters was held at Cannon-street Hotel on the 13th inst., at which the leading manufacturers of the various districts supplying the London market were present. The following resolutions were proposed, seconded, and unanimously passed:—

(1) "That in the opinion of this meeting of brickmasters supplying the London market, an advance in the selling price of bricks is imperative to meet the increased cost of fuel and materials, and the advance given in the price of labour."

(2) "That in the opinion of this meeting it would prove of great advantage to the industry, if brickmasters supplying the London district would co-operate in dealing with the various labour questions as they arise."

The Student's Column.

ELECTRICITY, MAGNETISM, AND ELECTRICITY SUPPLY.—IV.

CURRENT (*continued*).

IMPORTANT as are the effects produced within a conductor through which an electric current is flowing, still more important are the phenomena occurring in the medium around it. A suspended magnetic needle brought near a wire, carrying an electric current, tends to set itself at right-angles to the conductor, showing that a current produces a magnetic field in the surrounding medium, and thus establishing a connexion between electricity in motion and magnetism. An investigation of the magnetic field so produced, by means of iron-filings and a needle suspended in such a manner that it can point in any direction, shows that a current is surrounded by a series of circular lines of force, whose planes are perpendicular to the current, and whose centres lie in it. A field of this shape is frequently called a "whirl" of force.

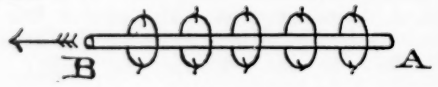


Fig 6.

Fig. 6 shows the relative directions of the current and of the circular lines of force. The diagram should be committed to memory, but the following rule, known as Ampère's, is also useful:—"Imagine yourself swimming in the current, so that it flows from your feet to your head, then if you face the magnetic needle, its north pole will be turned to your left hand."

It is the strength of the magnetic field produced by a current that is used for determining the strength of the current itself.

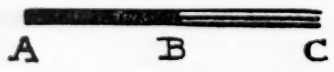


Fig 7

If a current is sent from A to B (fig. 7) through a solid conductor, and at B split up into three or more parts, so that from B to C a number of currents are flowing, which, added together, equal the current in A B, it will be found, the distances being in both cases the same, that the field produced by the current in A B at an external point is the same as that produced by the currents in B C. Again, if a given current flows along a straight conductor the number of lines of force produced by it will be proportional to its length. We say straight, because a conductor might be increased in length, but the added portion so shaped that the new lines of force neutralised some of the old ones, in which case the total number of lines would be diminished instead of increased. Before the strength of a current can be determined by measuring the field at a point external to it yet one thing must be known, and that is, how the strength of the magnetic field varies as we recede from the conductor. If we attempted to investigate this question by measuring the strength of field at various distances from a straight conductor, mathematical difficulties would arise in examining the results, firstly, from the fact that different portions of the current would be at different distances from the point in the field under consideration; secondly, because as we recede from the conductor in any direction, the distances from different parts of the current do not increase in the same ratio.

These difficulties can be got over by using conductors bent into circles, and noting the fields produced at their centres, from which, of course, every portion of the current is equidistant, taking into account the increased length of conductor when the distance is increased by the use of larger circles.

The following very simple demonstration of the law of the inverse square of the distance is due to Professor Silvanus Thompson.

A circular bobbin B_1 (Fig. 8), of radius r_1 is wound with n_1 turns of wire, the total length of which is therefore $2\ \pi\ r_1\ n_1$; a second smaller bobbin B_2 of radius r_2 is wound with n_2 turns of wire, and placed in the plane of the first bobbin, so as to have its centre O in common with it. A small magnetic needle is pivotted about one of its poles and placed so that when the plane of the coils faces east and west the second pole is at O. The connexions are made as shown in the figure, the connecting

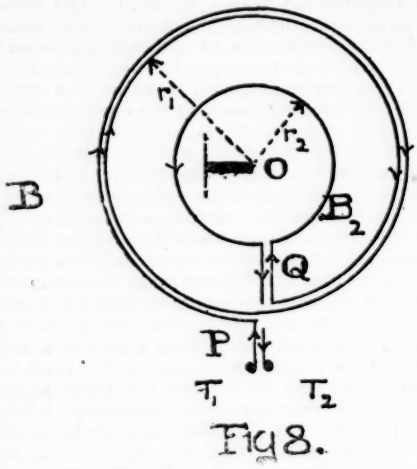


Fig 8.

wires P and Q, leading the current to and from the terminals T_1 T_2 and to and from the bobbins, being placed side by side, so that the whirl of force produced by the current in one wire is neutralised by the whirl produced by the same current going in the opposite direction in the other wire. It will be noticed that when a current is sent from T_1 to T_2, through the apparatus, the fields produced by the bobbins B_1 and B_2 tend to neutralise each other; the turns of wire are so adjusted that no matter how much current is sent through the instrument the needle remains undeflected, that is, the bobbins exactly counteract each other's effects at O. On counting the turns of wire, it will be found that

$$n_1 : n_2 :: r_1 : r_2 \qquad \text{(i)}$$

Let $[r]$ be the mathematical expression which gives the variation of strength of field with distance.

Then the strengths of field produced at O by the bobbins, since the same current traverses both, are proportional to $2\ \pi\ r_1\ n_1\ [r_1]$ and $2\ \pi\ r_2\ n_2\ [r_2]$, but matters have been so adjusted that these fields are equal, hence

$$2\ \pi\ r_1\ n_1\ [r_1] = 2\ \pi\ r_2\ n_2\ [r_2]$$

$$\text{therefore} \qquad \frac{[r_1]}{[r_2]} = \frac{r_2\ n_2}{r_1\ n_1} \qquad \text{(ii)}$$

$$\text{but from (i)} \qquad \frac{n_2}{n_1} = \frac{r_2}{r_1} \text{ substituting this value}$$

$$\text{in (ii)} \qquad \frac{[r_1]}{[r_2]} = \frac{r^2_2}{r^2_1} = \frac{\frac{1}{r^2_1}}{\frac{1}{r^2_2}}$$

$$\text{or} \qquad [r] \propto \frac{1}{r^2}$$

That is to say, the force varies inversely as the square of the distance. In the figure the radius of the outer bobbin is twice that of the inner one, so that one turn on B_2 balances two turns on B_1.

RECENT PATENTS.

ABSTRACTS OF SPECIFICATIONS.

18,802, Improvements in Water-closets. H. S. Booth.

In order to utilise the inflow of water under pressure to draw or force out the confined air and effluvia, an ejector, with controlling mechanism, is, according to this patentee, fixed so that the operation of flushing the closet automatically purifies the air.

1,578, Paint and Pigments. R. Stone.

The body of the paint which is the subject of this patent is made of China clay, marble, or any earthy substance of a fine, fibrous, silky nature. One or more of these or similar substances are mixed with petroleum oils or spirits, or with nitric or sulphuric acid. The mixture is then burned, which gives it a colour which is permanent and not likely to fade, and the resultant material is also fire and waterproof. Proportions of both pigments and media are varied at will, but the burning of the mass is an essential part of the invention.

2,121, Improved Building Block, Tile, or Slab. G. A. Wright.

According to this invention, a noiseless, non-absorbent tile is made of burnt clay, terra-cotta, concrete, or suitable material, and the face is dipped into india-rubber or such like solution; and while this is liquid, metal, flint, or granite powdered fine is sprinkled on the surface. The blocks are cemented together with bituminous cement.

12,829, Clamp. T. Metham.

The clamp, grip, or vice which is the subject of this patent is particularly adapted for the use of carpenters, joiners, or woodworkers, although it may be also utilised in other trades. It is formed of a combined set of levers or arms, in the shape of a fork or prong, upon the ends of which is fixed the grip or claw for compressing the material. The arms are actuated by means of a screw or screws, so placed that working it to right or left hand will cause the levers to expand or contract as may be required.

14,012, Substitute for Wood. H. B. Bentzen.

According to this invention, material for use in imitating wood-carvings is made by mixing dextrine, glue, and sawdust. For imitation carvings, the mass is mixed with dark sawdust and moulded under pressure, when the ornaments produced are of considerable strength and can be speedily and cheaply produced.

17,032, Portable Scaffold. A. T. Nygren.

This invention, which hails from Sweden, provides a hoist or scaffold which may be substituted for the ordinary stationary scaffold. Elaborate fixing by means of bars, screws, and bolts is provided, and a runner is clamped to the sloping roof and the cornice of the building. From the runner a kind of chair moved by ropes and winches depends, and this may be moved about to any part of the structure. The point of fastening, which looks strangely weak in proportion to the work required of it, is ingenious, but difficult to describe briefly.

NEW APPLICATIONS FOR PATENTS.

Jan. 6.—205, H. Johnson, Window Fasteners.

Jan. 7.—256, W. Halladay, Saw Sharpening Machines. 257, L. Halladay, Saw Swages. 258, L. Halladay, Saw Sharpening Machines. 263, J. Seketchazy, Portable Framework for Bridges. 274, A. Natterer, Electric Bells. 276, A. Boult, Sash Balances. 295, W. Kneen, Attaching Door Knobs to Spindles. 301, A. Lewis and J. Donaldson, Door Detainer.

Jan. 8.—330, J. Dunning and B. Priestley, Sash Fasteners. 353, N. Scott Russell, Combined Door Springs and Checks.

Jan. 9.—392, R. Brown, Batten Nail. 423, W. Silverlock, Ventilating Sewers, Drains, &c. 428, A. Wright, Weathered Facing Brick.

Jan. 10.—436, S. Hill and R. Hodges, Door Catches and Door Fasteners. 479, A. Marshall, Sewer Inverts. 481, E. Burtwell, "Rise and Fall" Brackets for Shop Window Fittings. 482, E. Burtwell, Sash Fasteners. 497, J. Gignez, Closing Doors.

Jan. 11.—509, W. Reynor, Testing and Flushing House Drains.

PROVISIONAL SPECIFICATIONS ACCEPTED.

19,393, W. Davis, Material for covering walls.—19,524, S. Empsall and W. Fish, Syphon Water Flusher for closets.—19,586, C. Smith, Imitation Marble, &c. — 19,617, M. Wardle, Self-acting Window Wedge.—20,470, J. Campbell, Drying Kilns.—20,691, R. Little, Fresh-air Induction Pipes for Warming Buildings, &c.—20,711, S. Danischewsky, Door-fastener.

COMPLETE SPECIFICATIONS ACCEPTED.

Open to Opposition for Two Months.

1,952, J. Merryweather, Paving.—2,780 and 22,781, A. Ponton and others, Artificial Stone.—4,005, J. Hall, Norfolk Latches.—4,065, W. Davidson, Fastenings for Rain-water Pipes, &c.—7,020.—H. Kimpton, Tip over Flushing Tank.—10,759, E. Massey, Fireplaces. — 16,774, H. Maddean, Carpenter's Ploughs and Filisters.—17,918, P. Knight and G. Hoyes, Door Knobs.—18,076, H. Lake, White Lead.—19,258, W. Wheatley, Roofs.—19,852, F. Prosser and W. Carter, Staining and Mottling Wood.

RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

JAN. 13.—By RUSSELL, CROWE, & CO.

Bermondsey—The lease of 13, Artillery-st., and the goodwill and plant of business premises, term 19 yrs.	£500

JAN. 14.—By E. & H. LUMLEY.

St. James's-st.—The leases of No. 33, term 16 yrs., r. £300, and 66, Jermyn-st., u.t. 29 yrs., r. £250	1,000

By LUCKHURST & LLOYD.

Brixton—184 and 186, Acre-lane, f., r. £64 p.a.	840
Clapham—F.g.r. of £26 p.a., with reversion in 35 yrs.	700
Wandsworth-rd.—No. 440, u.t. 48 yrs., g.r. £8, r. £42 p.a.	350

JAN. 15.—By D. YOUNG.

Newington—64 and 66, Albert-st., u.t. 60 yrs., g.r. £9	535
Stratford—101 and 103, Major-rd., u.t. 77 yrs., g.r. £6. 6s., r. £46. 16s.	240

By F. EILOART.

Kilburn, Dunster-gardens—A plot of f. land	165

JAN. 16.—By NEWBON & HARDING.

Barnsbury—53, Ellington-st., f., r. £45	790
Islington, Pied Bull-yd.—Stabling, &c., u.t. 25 yrs., g.r. £19, r. £55, p.a.	350
Clerkenwell—9, Ann-st., u.t. 26 yrs., g.r. £15, r. £62. 8s. p.a.	110
l.g.r. of £140 p.a., term 26 yrs.	1,200
Stoke Newington—5 and 7, St. Matthias-rd., u.t. 53 yrs., g.r. £1, r. £55	425

Kingsland—66, Downham-rd., u.t. 28 yrs., g r. £4. 10s., r £36 p.a. £270
Hoxton—61, Cropley-st., u.t. 15 yrs., g.r. £3, r. £28. 4s. p.a. 120
37, Cavendish-st., u.t. 15 yrs., g.r. £3. 10s., r. £30 p.a. 105
Mildmay-pk.—1, St. Jude-st., u.t. 42 yrs., g.r. £4, e.r. £32 p.a. 245

By F. J. BISLEY.

Rotherhithe—29 and 31, Paradise-st., f., r. £41. 12s. 355

[*Contractions used in these lists.*—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; e.r. for estimated rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; yd. for yard, &c.]

MEETINGS.

MONDAY, JANUARY 27.

Royal Academy.—Professor Aitchison, A.R.A., on "Roman Architecture.—Preliminary." 8 p.m.

Surveyors' Institution.—Mr. H. H. Smith, on "Landed Incomes." 8 p.m.

Society of Arts (Cantor Lectures).—Mr. Silvanus P. Thompson, D.Sc., on "The Electromagnet." II. 8 p.m.

TUESDAY, JANUARY 28.

Institution of Civil Engineers.—(1) Further discussion on Mr. G. F. Lyster's paper on "Recent Dock Extensions at Liverpool." (2, time permitting) Mr. W. H. Wheeler, on "Bars at the Mouths of Tidal Estuaries." 8 p.m.

Society of Arts (Applied Art Section).—Mr. E. C. Robins, F.S.A., on "The Relation of the Fine Arts to the Applied Arts." Mr. Walter Crane will preside. 8 p.m.

WEDNESDAY, JANUARY 29.

Society of Arts.—Mr. Gilbert Redgrave on "The Utilisation of Blast-furnace Slag." Prof. W. C. Roberts-Austen, F.R.S., will preside.

THURSDAY, JANUARY 30.

Royal Academy.—Professor Aitchison, A.R.A., on "The Laurentine Villa of Pliny the Younger." 8 p.m.

Royal Institution.—Mr. E. Roscoe Mullins on "Sculpture in Relation to the Age." II. 3 p.m.

Institution of Civil Engineers.—Students' visits to (1) the Deptford Station of the London Electric Supply Corporation. 11 a.m. (2) The New Chill-rooms at the Foreign Cattle Market, Deptford. 2 p.m.

FRIDAY, JANUARY 31.

Architectural Association.—Mr. E. W. Mountford, on "Free Libraries." 7.30 p.m.

SATURDAY, FEBRUARY 1.

Association of Public Sanitary Inspectors.—Sixth Annual Dinner.

Miscellanea.

Lectures under the Auspices of the Worshipful Company of Carpenters.—The following course of free lectures on matters connected with building will be delivered at Carpenters' Hall, London Wall, on the Wednesday evenings named, each lecture to commence at 8 o'clock p.m.:—Feb. 5, Mr. Banister Fletcher, on "Architecture in all Ages," illustrated by large drawings, expressly prepared, and photographs; the Rt. Hon. Sir John Lubbock, Bart., in the chair. Feb. 12, Prof. T. Roger Smith, F.R.I.B.A., on "Drawing—Geometrical and Perspective"; Sir J. C. Lawrence, Bart., in the chair. Feb. 19, Prof. W. H. Corfield, M.A., M.D., on "Modern Sanitation"; Mr. H. J. Kennard, in the chair. Feb. 26, Professor Armstrong, Ph.D., F.R.S., on "The Domestic Fireplace"; Mr. Charles Barry, F.S.A., F.R.I.B.A., in the chair. March 5, Prof. A. B. W. Kennedy, F.R.S., on "The Forth Bridge"; Mr. Alfred Preston, in the chair. March 12, Prof. Marshall Ward, M.A., on "The Tree, from the Sapling to the Bench"; Mr. Wyatt Papworth, F.R.I.B.A., Master of the Clothworkers' Company, in the chair. March 19, Prof. W. C. Unwin, F.R.S., on "The Construction of Walls"; Mr. Banister Fletcher, J.P., Master of the Carpenters' Company, in the chair.

The New Law Courts, Rome.—The concrete foundation-plate of the New Law Courts has been completed. The layer of *béton* has a thickness varying from 2·00 to 2·80 m., and has been spread over the whole of the building site at a depth of about 7·50 m. below street-level. It took two parties of men, each 700 strong, working day and night, in three shifts of eight hours' duration, to get the work done in thirteen weeks. The 56,000 cb. mètres of material used were mixed by hand, the proportion being three parts broken stone to two parts pozzolano and one part lime-paste.

New Imperial Palace at Frankfort.—A new palace is to be built for the Emperor at Frankfort-on-the-Main, at a cost of 100,000*l*. It will, it is said, be one of the finest palaces around that city, although the town is so rich in these from the Hesse, Nassau, and Grand-Ducal Homburg times. There is to be a banqueting hall capable of seating 120, and twenty-eight minor halls and saloons.

The Growth of Hong-Kong.—The *Times* says that at the opening of the session of the Hong-Kong Legislative Council on November 20, Governor Des-Vœux laid on the table a copy of an elaborate dispatch which he had just addressed to Lord Knutsford on the growth and prosperity of the colony. The document refers at length to everything connected with the recent growth of Hong-Kong. A striking evidence of the increase of wealth will be found in the prices of land. Since 1881 the price of marine lots has risen 50 per cent., and of those inland from 10 to 20 per cent. Land in Victoria in the best site is worth about 130,000*l* an acre, and lots have exchanged hands at such prices as 70,000*l*., 98,000*l*., 90,000*l*. an acre, and so on. In the Chinese business quarters it is not to be obtained at less than 97,000*l*. to 130,000*l*. per acre, while hill lots have increased in even greater proportion. Government lands which could not have been sold at 5 per cent. per square foot within the present decade have lately been sold at public auction for more than ten times that amount. The sums derived from land premiums, or the sums received from leases, are not included in the ordinary revenue, but are kept separate as matter of account, and are applied to defence and other permanent works. Next to the defence works, the greatest public work of recent years is the Tytam reservoir, which confines 350 million gallons of water behind a dam composed of granite and concrete, at a distance of five miles from the city of Victoria, and the conveyance of the supply by means of a tunnel 2,450 yards in length, and a cut granite aqueduct for the remaining distance. In concluding his long and interesting report, Sir William Des-Vœux says:—"There must be some still living who saw the island before the British occupation. If one of them, having been absent during the whole interval, were now to return, even the extremely salient and beautiful features of the natural landscape would scarcely enable him to identify with the Hong-Kong of to-day what he would remember as a bare rock, with a fisherman's hut here and there as the only sign of habitation, and a great sea-basin only very rarely disturbed by a passing keel. For now he would see a city of closely-built houses stretching for some four miles along the island shore, and rising, tier over tier, up the slopes of the mountain,—those on the upper levels interspersed with abundant foliage, while on the opposite peninsula of Kowloon, which was (until very recently) an uninhabited waste of undulating red rock, he would now see,—in the distance prevalent verdure,—in the foreground and along the whole sea-board numerous houses, together with docks, great warehouses, and other evidence of a large and thriving population. . . . "Going ashore our visitor would see long lines of quays and wharves, large warehouses teeming with merchandise, shops stocked with all the luxuries as well as the needs of two civilisations; in the European quarter a fine town-hall, stately banks, and other large buildings of stone; in the Chinese quarters houses, constructed after a pattern peculiar to China, of almost equally solid materials, but packed so closely together, and thronged so densely, as to be in this respect probably without parallel in the world."

The English Iron Trade.—The English iron market is quieter; but, although lower prices have been accepted during the week, it has lost nothing in its steadiness. Pig-iron has been further depressed in price, owing to the decline in warrants. Scotch warrants have been flat, and there has been some excitement in the market. Scotch makers' iron is still pretty strong, however, notwithstanding the adverse influence of warrants upon prices. Cleveland iron is 1s. 6d. per ton lower with makers, while merchants quote 3s. per ton less. There is less firmness in Lancashire and Midland brands generally; but Staffordshire pigs remain stiff. Bessemer iron in the North-west has lost 6d. a ton on the week, with makers firm at their quotations. Old materials are steady at a rise of 10s. per ton. The business doing in finished iron is moderate, and prices are easier in the North of England, but in Lancashire and Staffordshire they are strong, both common crown bars and sheets being 5s. per ton dearer. Steel continues in good demand, and is steady. Although billets and slabs are 2s. 6d. a ton lower in the North-west, blooms have gone up 2s. 6d. Shipbuilders continue busy, but not many new orders are booked. The condition of the engineering trades remains the same as reported last week.—*Iron.*

Liverpool Engineering Society.—The seventh meeting of the present session was held on Wednesday, the 15th inst., at the Royal Institution, Colquitt-street, Mr. Henry H. West, M.Inst.C.E., President, in the chair. After the usual routine business had been transacted, a paper entitled "Mechanical Refrigeration and the Manufacture of Ice" was read by Mr. M. C. Bannister. Having pointed out that artificially-produced cold had now become an absolute necessity, not only for the maintenance of our food supplies, but also for the economical prosecution of many chemical processes, the author gave a brief summary of the laws regulating the transmission of heat or cold from one medium to another. He then reviewed the various chemical and mechanical methods which have been used for the artificial production of cold, after which he proceeded to treat thermodynamically the various systems of refrigeration now in use, namely, those known as the cold air, sulphuric ether, sulphurous anhydride, carbonic anhydride, ammonia compression, and ammonia absorption. Each of these systems he dealt with separately, resolving all to a common thermal basis, viz., the heat units in one pound of coal consumed to raise steam to be used in a fairly high-class modern steam-engine. The general results obtained were demonstrated by graphic thermal diagrams, showing the various losses and ultimate useful effect of each system, and tables giving the vapour tensions and latent heat units of various temperatures. The author then briefly sketched the mechanical details of ice-manufacture, explaining his own recent improvements for the more economical manufacture of crystal ice in large blocks. The paper, which throughout was of a very interesting and exhaustive character, was concluded by some sketches of the floral crystalline formation of ice. The discussion upon the paper was adjourned until February 12.——The annual dinner of the Society took place on the 17th inst. at the Adelphi Hotel. The chair was taken by the President, Mr. Henry H. West, M.Inst.C.E., and there were about ninety members of the Society and other gentlemen present. The tables having been cleared, and the patriotic toast honoured, the Mayor (Mr. Thos. Hughes) proposed "The Engineering Profession," and referred to the triumphs of English engineering throughout the world, particularly pointing out as instances the Mersey Tunnel, the bridge across the Dee, and the docks at Liverpool, in regard to which no one could recognise more than he did the science that had been developed in this direction by his friend Mr. George Fosbery Lyster. None could doubt but that it was owing to the skill, perseverance, and energy of English engineers that this country had practically become the carrying power of the world. Sir John Coode, M.I.C.E., K.C.M.G., responded. The President then referred to the humble beginnings of their Society, and stated that some fifteen years ago it was held alternately in the homes of the members, but in course of time it had grown to be one of the most important auxiliaries of the parent Society. A move, he might mention, was being made to bring the whole into one common fold. He thought this was a step in the right direction. While not destroying the individuality of each Society, they would, by coming into communication with each other, tend to promote a higher standard of skill. Sir Charles Darbishire then proposed the toast of "Kindred Societies." Mr. T. Mellard Reade, F.G.S., responded, and expressed the opinion, as regards the two professions, that whilst emulation might be encouraged, there was no fear of competition.

The Corinth Canal.—The work on the Corinth Canal is again being actively prosecuted. Of the 12,000,000 cubic mètres of earth to be removed, two-thirds have already been excavated. It may be remembered that the Canal Company was in financial difficulties a little while ago, but these are now said to have been overcome, the Governments of Greece, Italy, and Austria having promised an interest guarantee of 10,000,000 francs. It is, however, expected that the canal cannot be finished in less than three years. It may be mentioned that this undertaking was in reality begun in the reign of Emperor Nero, over 1,700 years ago, but has been abandoned from time to time.

Oundle Sewerage.—Mr. W. H. Radford C.E., Nottingham, has been instructed to prepare plans for intercepting sewers and sewage precipitation-tanks at Oundle.

British Archæological Association.—At the meeting of this Association on Wednesday, the 15th inst., Mr. C. H. Compton in the chair, a communication was read from the owner of Eggeston Abbey, near Barnard Castle, denying that any of the ancient ruins had been purposely removed. A portion had been blown down, but the remainder would be carefully preserved. Mr. Loftus Brock, F.S.A., exhibited an old German book of sermons printed in 1516,—a fine specimen of monastic binding, in stamped leather, with brass bosses, of contemporary date. Mr. A. G. Langdon exhibited designs of a series of bench-ends which have been destroyed with the church of Lewenneck, Cornwall, recently burnt. Mr. Earle Way exhibited a series of examples of fictile ware found on the site of the old Marshalsea prison, Southwark. These remains are of Roman date, one being a curious imitation of a thin Samian ware bowl, in black Upchurch pottery. The chairman announced his recent correspondence with the Historical Manuscripts Commission relative to the records of Creake Abbey, preserved at Cambridge. A paper was then read by the Rev. Denny Gedge, on the brass of Sir Adam de Clifton, who died 1367, formerly existing in the Church of Methwold. It was sold by the sexton in 1680, to a travelling tinker, who broke it to pieces and melted a portion. The remainder was recovered and preserved in the parish church in a fragmentary condition, but in more recent years they again left the church. The pieces have now been put together and the brass fixed to the wall of the church. The brass is one of very considerable beauty, and the face appears to be a portrait. The second paper was on the Ancient Charters and the Boundaries of Crowland Abbey, by Mr. A. S. Canham. These documents are remarkable for being so full of inaccuracies, and it is well known that doubt has been thrown upon their value. The author contended that these were occasioned by the error of transcription either from memory or from poor copies, after the burning of the originals in Norman times. The matter was correct, although names and dates were often misleading. The boundaries were then discussed and all the names recorded in the old documents identified by the modern designations and the six boundary crosses which still remain. A seventh was ploughed up in 1848.

Institution of Mechanical Engineers.—The annual general meeting of this Institution will be held on Wednesday, Thursday, and Friday, Jan. 29, 30, and 31 respectively, in the hall of the Institution of Civil Engineers, Great George-street, Westminster. The following papers will be read, viz., "On the Compounding of Locomotives burning Petroleum Refuse in Russia," by Mr. Thomas Urquhart, Locomotive Superintendent, Grazi and Tsaritsin Railway, South-East Russia. "On the Burning of Colonial Coal in the Locomotives of the Cape Government Railways," by Mr. Michael Stephens, Chief Locomotive Superintendent. "On the Mechanical Appliances employed in the Manufacture and Storage of Oxygen," by Mr. Kenneth S. Murray, of London. Communicated through Mr. Henry Chapman.

The Royal Arcade, Melbourne, Australia. — A short time ago Mr. Howard Spensley invited competitive designs for enlarging the Royal Arcade, Bourke-street, by adding an annexe to run from Elizabeth-street and join the present arcade about the centre. A number of designs were submitted from the Colonies, and also from London, and after careful consideration the choice fell upon the design bearing the motto "Arcadia," which was awarded first premium, and was prepared by Mr. J. W. Lockwood, architect, Melbourne. The second premium fell to the lot of "Orient," Mr. John E. Still, architect, of London. It is intended to proceed with the erection of the building immediately. — *Melbourne Argus*, Dec. 6, 1889.

The New Government Buildings at Christiania.—In consequence of the unsatisfactory nature of the designs sent in for the new Government buildings at Christiania, the committee of adjudicators will, most likely, it is said, invite another competition. The two architects gaining the first and second premiums were Messrs. Lenschow and Fürst, the former's grouping of the details of the façade being commended, whilst the design of the latter is considered suitable for acceptance in the main; but neither of them satisfies the requirements set forth in the programme in its entirety.

Pavements and Horses.—It would be a step in advance if, failing the best of all pavements,—yet to be invented,—London, and for that matter other towns and cities as well, could be paved in some uniform pattern. In that case horse-owners could, at least, try to cope with whatever slipperiness might be inseparable from the use of some particular material, by adopting a modified shoe, or by using some sort of appliance adapted to counteract the tendency to slip. We have no desire, in connexion with this subject, to re-open the horseshoe question. It is sufficient to say that, notwithstanding all arguments and inventions, the great majority of our working horses are shod in the ordinary manner,—a manner which, whatever advantages may be claimed for it, is but ill suited for use upon wood or asphalte. Still, were London to be paved throughout its length and breadth upon some uniform plan, there need be little doubt that some kind of modification of the present style of shoe would be indispensable; but an present it is probably an impossibility to find a system which shall succeed equally well with all horses on all roads. It used to be an old coachman's maxim that accidents usually occurred at starting or pulling up; and the saying holds good now, not only in its original sense, but also in the matter of passing from one kind of pavement to another; for every practical coachman knows that, putting aside gradients, sharp stops, or exceptionally slippery portions of roadway, his horses nearly always either fall, or threaten to do so, when they come suddenly on to one substance after travelling on another. It is, however, worthy of note that some of the teams working in and out of London wear indiarubber pads, and the coachmen, amateur and professional, are unanimous in declaring that they prevent slipping, and enable the horses to travel at the requisite speed without any great amount of inconvenience.—*The Field*.

Plumbing Examinations at Bristol.—An examination of candidates for certificates of registration, under the auspices of the local district council, took place on Saturday last, at the Merchant Venturers' School, Bristol. The Worshipful Company of Plumbers were represented by Mr. W. C. Titmas, master plumber, and Mr. L. F. Gilbert, representative of the Operative Plumbers' Society of Great Britain, and the local examiners were Dr. D. S. Davies, Medical Officer of Health; Mr. T. S. Pope, architect; Mr. George Bracher, master plumber; Messrs. W. H. Hobbs and T. J. Edmonds, representing the local operatives' society, and Mr. Walter H. Perry, assistant honorary secretary. Candidates attended from Bristol, Bath, Crewkerne, Gloucester, and other places, and were examined in the theory and practice of plumbing, the theoretical questions being such (according to the *Western Daily Press*) as to test their knowledge of sanitary matters, besides other branches of the craft. The work done in both sections was of such a character that only 20 per cent. passed.

Cologne Cathedral.—The Society of Private Architects has published a circular-letter containing certain proposals for the opening-up of better views of the Cologne Cathedral, especially from the south-west corner. This new scheme has, however, come rather late, as alterations in the neighbourhood of the Dom are at present being carried out in accordance with the plans set up some time ago by Mr. Stuebbens. Both ideas might, however, yet be combined, and a very great improvement be then made, which would, however, require some 20,000*l*. more than has been granted as yet for the project.

The Archer Patent Water-tight Drain-pipe.—We hear that the drains at the Royal Barracks, Windsor, are being taken up and relaid with the Archer patent water-tight pipes, as it was found that many of the ordinary pipes had become broken through settlement of the ground. The Walthamstow Local Board have just adopted the Archer stoneware pipes for a main sewer through the marshy, water-logged ground near the river Lea. The Archer joint has been fully described and illustrated in the *Builder*.

The North Sea-Cattegat Canal.—A Bill empowering the construction of a canal between the North Sea and the Cattegat, *viâ* the Simfjord, in Jutland,—a scheme to which we referred last year,—has been introduced into the Danish Parliament. The *concessionaires* demand a State interest guarantee of 3 per cent. for fifteen years, the guarantee to commence a year after the completion of the canal.

Norwegian Wooden Villas.—Apropos of the Norwegian and Swedish wooden villas, of which specimens have been seen at various continental exhibitions in recent years, and which are finding much favour in other countries, a discussion has been started between certain Norwegian architects in their organ, the *Teknisk Ugeblad*, as to the merits of the architectural style adopted in the same. On one side it is argued that the style is not true Norwegian at all, but a modern concoction, the true Norwegian style being that of the so-called Stabur, the peculiar style of architecture seen in some very old churches, and the building termed Staburs on old farms. It reminds one somewhat of the Chinese pagoda. On the other side it is argued that the "villa" style is preferred to the Stabur style abroad. The two styles might have been contrasted at the last Paris Exhibition, where the villa (now standing at the foot of the Eiffel Tower) obtained two gold medals, but it should be pointed out that the Stabur was unfortunately not raised till after the jury's award. The latter is now shown in the Museum Van Kunstnijvertreid at Harlem. This style has been adopted, with certain necessary modifications, for nearly all rural railway stations in Norway. Finally, Herr Karl Norum, a well-known architect, whose speciality is the Stabur or Old Norse style of architecture, maintains that this style cannot be called Norse at all, but is a conglomeration of Roman, Gothic, and Renaissance, the treatment of which generally indicates a primitive and low intellectual standpoint of the builder. He considers, however, that the style is highly suitable as groundwork for picturesque villas.

PRICES CURRENT OF MATERIALS.

TIMBER.	£.	s.	d.	£.	s.	d.
Greenheart, B.G. ....ton	7	0	0	7	15	0
Teak, E.I. ....load	12	0	0	14	0	0
Sequoia, U.S. ....foot cube	0	2	3	0	3	0
Ash, Canada ....load	3	0	0	4	5	0
Birch ,, ...	3	0	0	4	15	0
Elm ,, ...	3	10	0	4	15	0
Fir, Dantsic, &c.	2	0	0	3	10	0
Oak ,, ...	2	10	0	4	10	0
Canada	5	10	0	7	0	0
Pine, Canada red	2	10	0	3	10	0
,, yellow	3	0	0	5	5	0
Lath, Dantsic ....fathom	4	10	0	5	10	0
St. Petersburg	5	0	0	6	10	0
Wainscot, Riga, &c. ....log	0	0	0	0	0	0
Deals, Finland, 2nd and 1st. std. 100	8	10	0	11	0	0
,, ,, 4th and 3rd	7	0	0	8	0	0
Deals—Riga	7	0	0	9	0	0
St. Petersburg, 1st yellow	11	0	0	14	0	0
,, 2nd ,, ...	9	0	0	10	10	0
,, white	6	10	0	10	0	0
Swedish	7	10	0	16	0	0
White Sea	9	0	0	17	0	0
Canada, Pine, 1st	16	0	0	26	0	0
,, ,, 2nd	11	0	0	17	10	0
,, ,, 3rd, &c.	8	0	0	10	10	0
,, Spruce, 1st	9	0	0	11	0	0
,, ,, 3rd and 2nd ..	7	0	0	9	0	0
New Brunswick, &c.	6	0	0	8	10	0
Battens, all kinds	6	0	0	17	0	0
Flooring Boards, sq., 1 in., prepared, First	0	11	0	0	14	0
Second	0	8	0	0	10	6
Other qualities	0	6	0	0	7	9
Cedar, Cuba ....foot	0	0	4	0	0	5
Honduras, &c.	0	0	4	0	0	4½
Mahogany, Cuba	0	0	5	0	0	6½
St. Domingo, cargo average ..	0	0	5	0	0	6½
Mexican, cargo average	0	0	4½	0	0	5½
Tobasco ,, ...	0	0	5½	0	0	6½
Honduras ,, ...	0	0	5½	0	0	6½
Box, Turkey ....ton	4	0	0	13	0	0
Rose, Rio	15	0	0	20	0	0
Bahia	14	0	0	18	0	0
Satin, St. Domingo....foot	0	0	9	0	1	3
Porto Rico	0	0	10	0	1	6
Walnut, Italian	0	0	4½	0	0	6½
METALS.						
IRON—						
Bar, Welsh, in London ....ton	7	15	0	8	5	0
,, ,, at works in Wales	7	5	0	7	15	0
,, Staffordshire, in London..	8	10	0	9	10	0
COPPER—British, cake and ingot	57	0	0	58	0	0
Best selected	59	0	0	60	0	0
Sheets, strong	66	0	0	0	0	0
Chili, bars	49	0	0	0	0	0
YELLOW METAL....lb.	0	0	5½	0	0	6
LEAD—Pig, Spanish ....ton	13	17	6	0	0	0
English, com. brands	13	17	6	14	0	0
Sheet, English	16	0	0	0	0	0
Pipe	16	10	0	0	0	0
TIN—Straits	94	0	0	0	0	0
Australian	94	10	0	0	0	0
English Ingots	99	0	0	0	0	0
OILS.						
Linseed ....ton	20	10	0	20	17	6
Cocoanut, Cochin	26	0	0	26	10	0
Ceylon	23	15	0	0	0	0
Palm, Lagos	25	10	0	0	0	0
Rapeseed, English pale	32	10	0	32	15	0
,, brown	31	0	0	31	5	0
Cottonseed, refined	22	0	0	0	0	0
Tallow and Oleine	21	0	0	40	0	0
Lubricating, U.S.	5	10	0	6	10	0
,, refined	7	0	0	12	0	0
TAR—Stockholm....barrel	1	6	6	0	0	0
Archangel	0	17	6	0	0	0

COMPETITION, CONTRACTS, & PUBLIC APPOINTMENTS.

Epitome of Advertisements in this Number.

COMPETITION.

Nature of Work.	By whom Required.	Premium.	Designs to be delivered.	Page
Market House and Public Offices	Gainsboro' Local Board	26*l.* 5s. and 5*l.*	Mar. 7th	ii.

CONTRACTS.

Nature of Work or Materials.	By whom Required.	Architect, Surveyor, or Engineer.	Tenders to be delivered.	Page.
Alterations, &c., to Offices, Board Room, &c.	West Ham Union	F. J. Sturdy	Jan. 29th	ii.
Works and Materials	Chelsea Vestry	T. W. E. Higgens	Jan. 30th	ii.
Engine and Boiler Houses, Chimney Stack, &c.	Staffs. Potteries Waterworks Co.	G. D. Harrison	do.	ii.
Land Drainage	Central Lond. Sch. Dist.	Jarvis & Son	Feb. 3rd	xii.
Paving Carriageways	Bermondsey Vestry	*Official*	do.	xii.
Broken Granite	Paddington Vestry	ditto	do.	xii.
Granite Kerb, Cubes, and York Paving	ditto	ditto	do.	xii.
Tar-paving, &c., Nunhead-green and Goose-green	London C. C.	ditto	do.	xii.
Steward's House at Infirmary	St. Marylebone Gdns.	H. Saxon Snell & Son	do.	xii.
Erection of Stables, &c., at Schools, Enfield	Edmonton Union	T. E. Knightley	Feb. 4th	xii.
Wood-paving Repairs, Carbolic Disinfectants	St. Margaret, &c. (Westminster) Vestry	G. R. W. Wheeler	do.	xii.
Street Cleansing, Watering, and Removal of Dust	ditto	ditto	Feb. 5th	ii.
Roadmaking and Paving Works	Fulham Vestry	W. Sykes	do.	xii.
New Schoolroom	Harmondsworth Sch. Bd.		do.	xiii.
Broken Granite	Reigate Highway Bd.	*Official*	Feb. 6th	xiii.
Making-up Roads	Ealing L. B.	C. Jones	do.	xii.
Sea Wall and Extension of Esplanade	Sandown L. B.	J. Newman	do.	xii.
Watercloset, Southwark Park	London C. C.	*Official*	Feb. 10th	xii.
Superstructure of Public Baths	Leicester Corporation	S. Harrison	do.	xii.
Air Valves, Casings, and Surface Boxes	Manchester Corporatn.	G. H. Hill	do.	xii.
Work, Materials, &c.	St. Mary Abbotts (Kensington) Vestry	*Official*	Feb. 11th	xii.
Works and Materials	St. Mary (Battersea) Ves.	J. T. Pilditch	do.	xiii.
Re-laying Sewer, &c.	South Hornsey L. B.	*Official*	Feb. 12th	xii.
Sorting Office, Sheffield	Com. of H. M. Works	ditto	Feb. 14th	ii.
Gymnasium, &c., Battersea Park	London C. C.	*Official*	Feb. 17th	xii.
Reservoirs, Cottage, &c.	Coventry Corporation	T. & C. Hawksley	do.	ii.
Additions, Alterations, &c., to Board Schools	Orpington Sch. Board	St. Pierre Harris	Feb. 18th	xiii.
Sewerage Works, Heswell	Wirral U. K. S. A.	C. H. Beloe	do.	xiii.
Completion of Portion of Aqueduct (Wtrks.)	Manchester Corporatn.	G. H. Hill	Feb. 24th	xii.
Extension, &c., of Pier	Southampton Hrbr. Bd.	J. G. Poole	Mar. 1st	ii.
New Hospital	Salford Corporation	Maxwell & Tuke, &c.	Not stated.	xii.
Mission Room, Hurstpierpoint		Ewan Christian	do.	xii.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary.	Applications to be in.	Page.
Surveyor	Stroud Local Board	150*l.*	Jan. 30th	xvi.
Road Surveyors	Norfolk Highway Com.	2*l.* per week each	Feb. 1st	xvi.
Surveyor, Inspector of Nuisances, &c.	Faversham Corporatn.	160*l.*	Feb. 5th	xvi.
Inspector of Nuisances	Carlisle Corporation	125*l.*	Feb. 8th	xvi.

TENDERS.

[Communications for insertion under this heading must reach us *not later than* 12 *noon on Thursdays.*]

BRISTOL.—For erecting new Wesleyan School-Chapel at Bishopston. Mr. Herbert J. Jones, architect, Bristol:—

Eastabrook & Sons	£2,455 0 0
Church, Wm.	2,393 0 0
Hatherly, E. T.	2,349 0 0
Davis, J. E.	2,320 0 0
Walters, E.	2,297 0 0
Cowlin & Sons	2,293 0 0
Tambling Bros.	2,274 0 0
Perkins, J.	2,260 0 0
Humphreys, G.	2,140 0 0
Lewis, T. R.	2,065 0 0
King & Son, Bitton, near Bristol*	2,020 0 0
Perrott, J. (accepted)	1,985 0 0
Tyler, G. (withdrawn)	1,650 0 0

* The others all of Bristol.

BRISTOL.—For alterations at "The Bon Marché," Queen's-road, Bristol. Mr. Herbert J. Jones, architect:—

J. Bastow	£490 0 0
G. Humphreys	463 0 0
Cowlin & Sons	451 12 0
T. R. Lewis (accepted)	441 0 0

[All of Bristol.]

BRISTOL.—For the erection of proposed new Liberal Hall and Clubhouse, at Bedminster, Bristol. Mr. F. W. Wills, architect:—

	Hall.	Club.	Total.
Stephens & Bastow	£4,410	£1,443	£5,853
Eastabrook & Sons	4,245	1,543	5,788
W. Church	4,159	1,438	5,597
W. Cowlin & Son	4,139	1,395	5,534
E. T. Hatherly	4,100	1,387	5,487
J. Wilkins & Sons	3,983	1,413	5,396
J. James	3,900	1,200	5,100
H. J. Rossiter	3,749	1,260	5,009
A. Krauss	3,657	1,343	5,000
A. J. Beaven (accepted)	3,700	1,270	4,970

[All of Bristol.]

BRISTOL.—For steel stancheons, girders, roofs, and general construction in warehouses and granary. Quantities by Mr. P. P. Hore, C.E.:—

William Lindsay & Co., Westminster (accepted)	£6,540 0 0

[No competition.]

BROMLEY (Kent).—For heating, pumping, &c., to new baths and hall, Bromley, Kent.

Vaughan & Brown	£1,225 0 0!
Warner & Sons	1,200 0 0
J. Keith	1,000 0 0
Jones	840 0 0
Russell & Sons	740 0 0
J. Smeaton	651 15 6!

CANTERBURY.—For heating by hot water on the low-pressure system the Sidney Cooper School of Art Gallery, for the Canterbury Corporation. Mr. Frank Baker, C.E., City Surveyor:—

Hayward Bros. & Eckstein, 187, Union-street, Borough, S.E.	£145 0 0!
Clements, Jeakes, & Co., 57, Great Russell-street, Bloomsbury	137 10 0
W. H. Wharton, Ironfounder, Spital Works, Chesterfield	120 0 0
Messenger & Co., Midland Horticultural Works, Loughborough	101 5 0
J. Jeffreys, 10, Great Queen-street, Westminster	97 0 0
Court Bros., Canterbury	92 10 0
Comyn, Ching, & Co., 54, Castle-street, Long-acre, W.C.	80 0 0
Jones & Co., 42, Farringdon-street, E.C. (1	78 0 0
Ditto ditto (2)	57 0 0
Ditto ditto (3)	52 0 0
Drury & Biggleston, Canterbury*	73 12 0
Bacon & Co., 34, Upper Gloucester-place, N.W.	69 0 0!

* Accepted.

CHESTER.—For alterations and additions to premises at the corner of Foregate-street and Seller-street, Chester, for Messrs. Bradley. Messrs. John H. Davies & Son, architects, 24, Newgate-street, Chester. Quantities by the architects:—

Wm. Parrott, Chester	£1,000 0 0
Wm. Dutton, Chester	985 0 0
G. Forester, Chester	955 0 0
J. Mayers, Chester (accepted)	950 0 0

CHISWICK.—For making up roads, &c., at Chiswick for the Chiswick Local Board:—

Barrowgate-road.

Serff, Hoole, & Co.	£765 0 0
Adams	753 1 8
Nowell & Robson	753 0 0
Rhodes	694 5 9
Tomes & Wimpey	680 0 0
Victoria Stone Company	674 4 0

Clifton-gardens.

Ball	£1,029 16 0
Nowell & Robson	924 8 9
Adams	906 1 4
Serff, Hoole, & Co.	889 0 0
Rhodes	732 2 6

COLCHESTER.—For the erection of stables, and alterations, at William's Walk, for Mr. G. W. Mallinson. Mr. J. W. Start, architect, Cups Chambers, Colchester:—

T. J. Ward	£250 0 0
A. Diss	250 0 0
F. Dupont	247 0 0
C. E. Orfeur	243 0 0
W. A. Chambers (accepted)	198 0 0

[All of Colchester.]

HOLMWOOD (Surrey).—For repairs to "Redland's Bank," Holmwood, for Mrs. Ann Gammon. Messrs. H. M. & W. Grellier, architects:—

Colls & Sons	£444 0 0
W. J. Chivington	385 0 0
William Edser	383 0 0
Bargman & Son	380 0 0
S. J. Pledge & Son	379 0 0
W. J. Pierce	334 10 0
Hot-water Fittings and Sanitary Work.	
J. Tylor & Sons (accepted)	220 0 0

ILLOGAN (Cornwall).—For the erection and completion of new school buildings at Illogan, near Redruth, together with enclosures, and providing for complete water supply. Mr. Sampson Hill, Redruth, architect:—

J. Odgers, Redruth	£1,225 10 0
J. Julian, Truro	1,195 0 0
E. Pooley, Pool	1,115 10 0
W. H. Moyle, Chacewater	1,092 10 0*
W. H. Gray, Illogan	1,044 10 0
A. Nicholls & Son, Redruth	1,020 0 0
(Accepted)	
T. Willoughly, Redruth	1,014 0 0*

* And extras. The extras are for gates and railings which these contractors have not included in the price given.

LONDON.—For rebuilding the Divisional Police-station, Leman-street, Whitechapel, for the Receiver for the Metropolitan Police District. Mr. John Butler, F.R.I.B.A., architect. Quantities by Mr. W. H. Thurgood:—

		Allow for Old Materials.
W. Scrivener & Co.	£17,300	£100
Kirk & Randall	16,820	150
Higgs & Hill	16,580	80
John Mowlem & Co.	16,480	—
Dove Bros.	16,285	70
Colls & Sons	16,230	49
John Grover & Son	15,950	—
Patman & Fotheringham	15,997	57
Ashby & Horner	15,976	47
Hart Bros.	15,960	65
Holland & Hannen	15,920	50
E. Perkins	15,900	45
J. T. Chappell	15,634	50
Lathey Bros.	15,490	57
Garlick & Horton, Limited	15,450	150

LONDON.—For alterations and additions to the "Duke of York," Victoria-street, Westminster, for Mr. S. Stops. Messrs. Saville & Martin, architects, 86 and 87, Strand, W.C:—

Patman & Fotheringham	£3,654 0 0
Ward & Lamble	3,547 0 0
Ansell	3,333 0 0
Burman & Son	3,195 0 0
Chappell & Co.	3,089 0 0
Gregory	3,087 0 0
Toms	3,028 0 0
Gould & Brand	2,987 0 0
J. Beale	2,950 0 0

LONDON.—For the erection of three shops and dwelling-houses, Rosslyn-hill, Hampstead, for Mr. James Brimbridge. Mr. Albert E. Fridmore, architect, 2, Broad Street-buildings, E.C. Quantities by Mr. Alfred Griggs:—

G. Lyford	£4,590 0 0
Potter & Son	4,450 0 0
Garnar, A. & W.	4,100 0 0
Taylor & Son	4,086 0 0
E. Toms	4,045 0 0
McCormick & Sons	3,998 0 0
Grover & Sons	3,779 0 0
Killby & Gayford	3,734 0 0
H. King & Co., Hampstead*	3,484 0 0

* Accepted. (No shop-fronts in this contract.)

LONDON.—For alterations at 5, Carter-lane, E.C., for Miss Heald. Messrs. Hudson and Booth, architects:—

Hall, Beddall, & Co.	£294 0 0
Spencer & Co.	250 0 0
J. Greenwood	249 0 0

LONDON.—For paving, kerbing, &c., for the Camberwell Vestry. Mr. J. C. Reynolds, Surveyor:—

Kitto-road, Nunhead.

Mrs. Gatty, Camberwell	£153 0 7
Jas. Stowell, Camberwell	136 13 0
Mowlem & Co. (accepted)	123 5 0

Haymerle-road.

Mowlem & Co.	967 9 11
Jas. Stowell	871 18 6
Mrs. Gatty (accepted)	844 14 2

Hansler-road.

Jas. Stowell, Camberwell (accepted)	540 0 7

LONDON.—For additions and sundry works to premises, Heath-street, Hampstead, for Mr. I. T. Richardson. Mr. Albert E. Fridmore, architect, 2, Broad-street Buildings, E.C.:—

H. & W. Grey	£290 0 0
Taylor & Son	272 0 0
W. Birch	265 0 0
R. E. Annam (accepted)	215 0 0

LONDON.—For the erection of a shop and dwelling-house, Rosslyn-hill, Hampstead, for Miss Emma Day. Mr. Albert E. Pridmore, architect, 2, Broad-street-buildings, E.C. Quantities by Mr. Alfred Griggs :—

Lyford, G.	£2,512	0	0
Taylor & Son	1,377	0	0
Garnar, A. & W.	1,360	0	0
Toms, E.	1,339	0	0
McCormick & Sons	1,298	0	0
Grover & Son	1,261	0	0
Killby & Gayford	1,234	0	0
*H. King & Co., Hampstead	1,146	0	0
Potter & Son	1,140	0	0

*Accepted. (No shop-front in this contract.)

LONDON.—For alterations at No. 2, Little Howland-street, W., for the West-end Glass and China Burning Company. Mr. John James Downes, architect, 11, The Parade, Lewisham High-road, S.E. :—

Catchpole	£204	0	0
John Grover & Son	174	10	0
Sydney Best (accepted)	168	0	0

LONDON.—For alterations and additions to the "King's Arms" Tavern, Fulham-road, for Mr. W. Hancock. Mr. H. I. Newton, architect, No. 5, St. Margaret's Chambers, 49, Victoria-street, Westminster.

Kellaway	£2,440	0	0
Lamble	2,290	0	0
Godden	2,273	0	0
Burman	2,240	0	0
J. Beale	2,030	0	0

LONDON.—For alterations and additions to the *Morning Advertiser* office, 127, Fleet-street, for the Incorporated Society of Licensed Victuallers. Messrs. Treacher & Fisher, architects, 30, Coleman-street, E.C. :—

Walker	£512	0	0
Burman	489	0	0
Pew	446	0	0
Spencer & Co.	440	0	0
J. Beale	390	0	0

LONDON.—For alterations and general repairs to the "Maismore Arms," Peckham Park-road, for Mr. P. O'Callaghan.

J. Beale	£293	0	0

[No competition.]

SCAWBY (Lincolnshire).—For building mansion, Scawby Grove (exclusive of stabling and lodge), for Mr. Joseph Cliff, J.P. Mr. E. W. Farebrother, architect, Grimsby :—

Holmes & Co., Wainfleet	£8,275	0	0
Enoch Hind, Nottingham	8,247	0	0
C. Baines, Newark	8,100	0	0
H. S. and W. Close, Lincoln	7,785	0	0
J. Guy & Co., Grimsby (accepted)	7,600	0	0

WOOLWICH.—For alterations and additions to the "King's Arms," Woolwich Common, for Mr. T. W. Earle. Mr. R. A. Lewcock, architect, 88, Bishopsgate Within :—

Todd	£1,094	0	0
Allen & Son	986	0	0
Spencer & Co.	900	0	0
J. Beale	845	0	0

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